

The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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The West Six Cylinder Engine.

The West 6-cylinder engine although well-known in England is a novelty in this country. In principle it differs entirely from other engines with multiple cylinders, in that each of its six cylinders is parallel with the shaft, and no connecting rod or piston is used. Each piston bears upon the edge of what is known in mechanics as a "swash plate," and from the center of this plate there is a pin projecting by which the crank is driven. Our illustrations enable the reader to obtain a very clear idea of these engines. Figure 1 shows an external view of the engine fitted with a reversing lever. In this form it is suitable for use in mills, hoists, elevators, winches, capstans, steering apparatus, or in driving boats, tugs or steam launches, or in fact in any position in which a reversing engine is needed. When the engine is not intended to reverse, the sector, reversing lever and collar and

consequently working steam tight between the port face and steam chest cover. The ring forms a perfect balanced equilibrium valve.

The steam is admitted by the inlet passage L, and fills the annular space left in the steam chest outside the circumference of the valve ring K, the eccentric motion of which alternately opens and closes all the steam ports, successively admitting steam to the cylinders, from which it again escapes to the exhaust chamber M, formed by the inside of the valve ring, and thence through openings into the body of the engine, and is finally discharged by the exhaust pipe N.

Fig. 4 is a view of the interior of the engine, with the back cover

is sensibly uniform, each point revolving in a circle apparently an inch in diameter, the surface produced, as might be supposed, being polished like a looking glass. The points of contact between the pistons and the plate are points of rolling contact, but of a slightly different character from that of the plate upon its abutment. The long bearings of the pistons should make them very durable. Altogether the engine is one which deserves careful attention from those who need compact, light, economical and easily reversed high-speed engines.

It is intended shortly to indicate the engine and test it at the friction brake. Of these tests, as well as those which have been made in England, we hope to give some particulars at a future day.

The Tests of Iron Bridges in France.

The French Minister of Public Works has promulgated a circular giving requirements for designing and testing iron bridges, which

weighing 72 tons and each car weighing 15 tons. This train is to be brought upon the bridge and kept there standing for two hours after all signs of deflection have ceased. For continuous bridges each span is to be thus loaded independently of the others and afterward each two spans. No mention is made of measurements of deflections or other observations attending these tests, but being under official control of government engineers such records are undoubtedly kept in full detail.

For the rolling load tests the train just mentioned passes over the bridge at the rate of 25 kilometers per hour, and afterward another train composed of cars equal in weight to the most heavily loaded passenger cars passes first with the velocity of 35, and, secondly, with a velocity of 50 kilometers per hour. For double track bridges each track is to be tested independently and then both together, the two trains in this case moving in the same direction with the assigned velocities.

dergone a thorough improvement. New hoisting machinery of great power, has been erected at the shaft and the capacity of the works for production greatly enlarged. The company has advertised for 50 additional English and German miners. The vein of coal is from 20 to 25 feet thick. The prices offered for mining are better than are being paid in the small veins of the bituminous districts of Pennsylvania. A splendid opportunity is here presented to good and industrious miners who aspire to a better condition. The anthracite coal fields, with their over-supply of labor and destructive competition in the markets, cannot hold out the same inducements. The managers of the Clover Hill mines are represented to be very clever gentlemen, who show a disposition to kindly care for their employees.

Alterations in the Victorian Tariff.

The growing importance of American

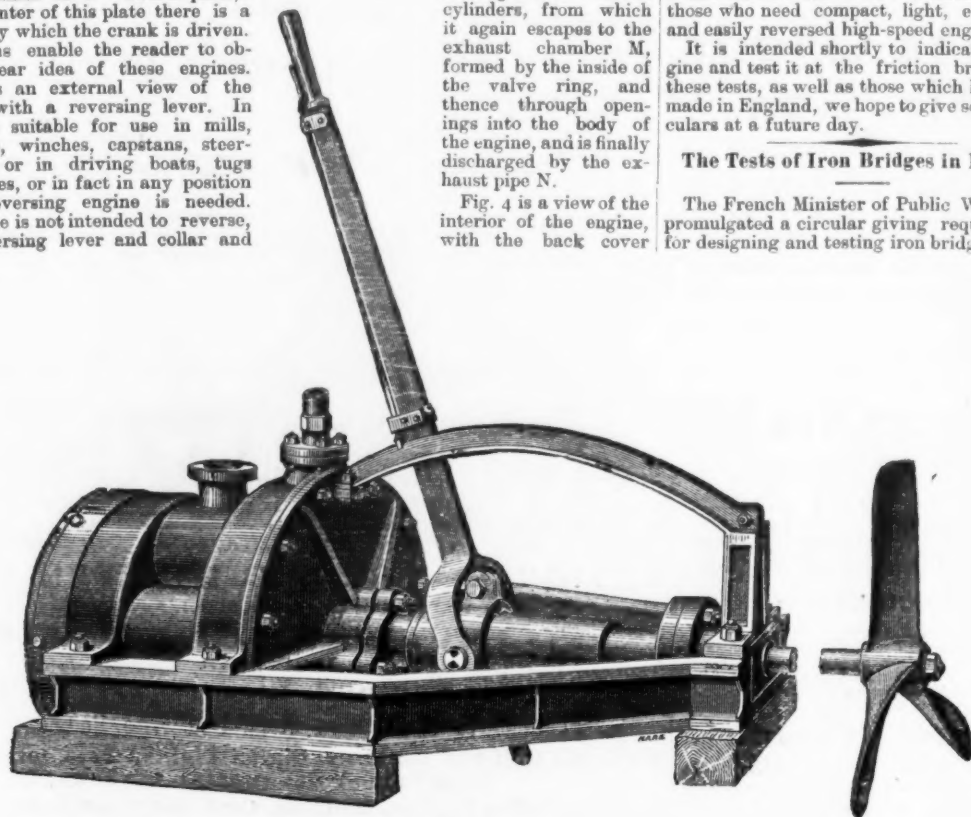


Fig. 1.

THE WEST SIX-CYLINDER ENGINE, BY MESSRS. C. H. DELAMATER & CO.

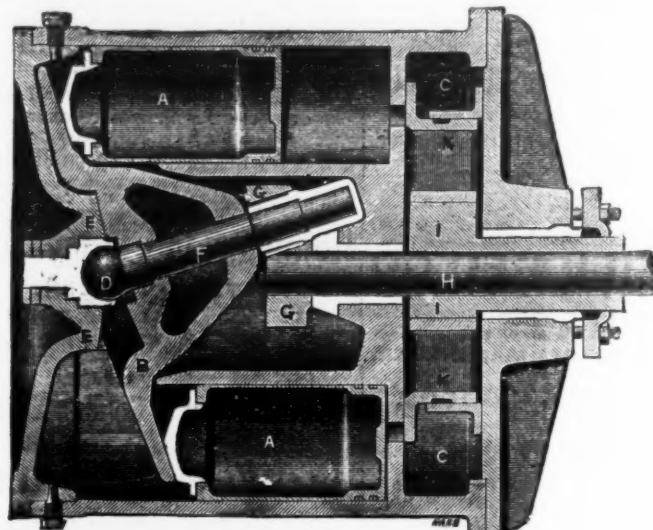


Fig. 2.

sleeve on the shaft, are omitted. In all other respects the engine is the same, slight modifications of bed-plate or framing being made to accommodate it to various uses.

To understand the mode of action of the engine, let it be imagined for a moment that the crank shaft is vertical, and let it be turned by hand. Then as the crank is turned the part of the disk or "swash plate" opposite to it is always in the highest position, but as the disk does not revolve, the part which is the highest is constantly changed, and every point is raised and depressed during each revolution of the crank. As the pistons successively push upon the part of the disk before them, the axis of the crank pin describes a cone, and the end in the crank revolves in a circle about the shaft and gives motion to the latter by driving the crank. The outer surface of the disk and the metal at the back of the engine about the ball-and-socket joint are coned to a bevel, so that as the engine works the disk cone rolls upon the fixed cone and the whole pressure is borne upon the rolling surfaces. The ends of the pistons are also coned to the angle at which the disk plane is inclined, and they have a similar rolling contact, always presenting a radius of an obtuse cone to the plane, and thus giving a broad surface of contact to bear the pressure.

The back cover of the engine is held in place by bolts, so that the cover can be removed, exposing all of the pistons, the eccentric valve, &c. The main body of the engine consists of one casting, containing six cylinders, arranged in a circle, and parallel with one another like the chambers of a revolver. Fig. 2 is a horizontal, longitudinal section of the engine. The pistons A take the form of a solid ram or plunger, one end bearing continuously against the conical disk B. They are single acting, being subject to steam pressure upon the opposite side or flat end only. Steam is admitted successively to the six cylinders from the steam chest C, three pistons being constantly in action at different points of the stroke, thereby imparting a uniform rolling motion to the conical disk B, which is supported at its center by the ball and socket joint D, and also rolls upon the conical surface of the back plate E, which is turned to the same angle, and thus receives the full thrust of the pistons and protects the ball and socket joint D from any undue strain. The crank pin F is securely fixed in the center of the conical disk B, the rolling motion of the disk causing the pin to describe a circle, and by means of the crank G imparting a rotary motion to the shaft H. The shaft H passes through the center of the steam chest C, and carries an eccentric I, giving motion to the circular valve K, the action of which is more clearly defined in Fig. 3. In this figure the ports are seen in a circle, being merely openings in the thin plate of metal forming the ends of the cylinders. The valve K, is made in the form of a split ring, the opposite flanges of which are forced asunder by the pressure of the steam entering between them, the valve

taken off and the disk and pistons removed, showing the position of the steam ports and exhaust passages, the exhaust pipe N, and the crank G.

All the working parts are lubricated by the steam, which is charged with oil from a lubricator on the steam pipe. The engine is usually constructed to cut off steam at

are to be legally binding in all cases hereafter. They are the result of the careful consideration of the entire subject by a special commission of engineers. The *Railway Review* gives the following summary of them:

Railway bridges must be so proportioned in each member that in the most unfavor-

The use of a locomotive weighing with its tender more than 72 tons is not allowed except by a special dispensation from the Minister of Public Works. When the rolling stock which is to use the bridge is considerably lighter than that of the above testing train, the administration will decide whether or not a less rolling load than that

trade in Australia makes any information bearing upon the trade relations of the colonies with the outside world of much importance. Below we give the alterations in duties imposed by the present tariff of Victoria. This tariff was a measure introduced in the latter part of 1877.

NEW DUTIES.

Bags—gunny and mats, 6d. per dozen; corn, flour, &c., 1/ per dozen; woolpacks, 3d. each. Gasaliers and chandeliers, 20 per cent. ad valorem. Saddle trees—riding, 20/ per dozen; harness, 10/ per dozen. Jewelry, partly manufactured, 20 per cent. Leather—calf (excepting French calf and crust or rough-tanned calf). Jute matting.

ADDITIONAL DUTIES.

Children's boots and shoes, Nos. 0 to 6 and slippers, from 3/ per dozen pairs to 6/. Doors, from 2/6 to 5/ each. Horse-shoe nails, from 3/ to 12/ per cwt. Gold and silver leaf, from 10 per cent. to 20 per cent. Matches and vestas, from 10 per cent. to fixed rates of 6d. per gross of boxes on wooden matches, 1/ and 1/3 on vestas.

DUTIES CHANGED FROM AD VALOREM TO FIXED RATES.

Under the heading of glassware—former rate of duty, 20 per cent. to 1/9 per cubic foot. Earthenware—former rate of duty, 10 per cent. to 1/3 per cubic foot. Chinaware and porcelain—former rate of duty 10 per cent. to 1/3 per cubic foot.

ADDITIONAL LIST OF GOODS AND MERCHANDISE EXEMPTED FROM DUTY.

Fruits, dried. Fish, salted, dried, or preserved in brine. Milk, preserved. Iron, galvanized. Iron, wire, Nos. 1 to 9. Screws. Oils in bulk, excepting kerosene. Paints, wet or dry. Rock salt. Slates. Timber, undressed. Timber, hickory spokes and felloes in the rough. Bricks, bath. Cartridges. Cement. Twine, sewing or seaming, of hemp, cotton or flax. Fine gunpowder, in kegs of not less than 25 lbs. weight net. Manufactures of metals: Anvils, beams and scales, bells (except bullock and horse), bench screws, bridge and boot hooks, cast-iron tanks, cast-iron ventilators, calking irons, chains, chest handles, clocks (iron), coach screws, cork squeezers, curling irons, cramps (wrought iron), diving apparatus, ferrules (wrought iron), funnel pipes, gasometers, lightning conductors, marine spikes, measures (iron), pincers, rakes, sad irons, steel-yards, strap hinges, switching bills, tuc irons, irons (cast and water), vises. Machinery used in the manufacture of paper. Slate slabs not wholly manufactured. Gilt mouldings and beadings for picture frames of wood or of other material. Watches. Fancy goods. Toys. Platedware—Door handles, locks, shaft tips, stump and finger joints, and slot irons used in carriage building.

The water works machinery at Urbana, Ohio, is now completed, and the first fires were built in the boilers on the 12th inst. The *Engineering News* says that the pipes were to be filled two weeks ago.

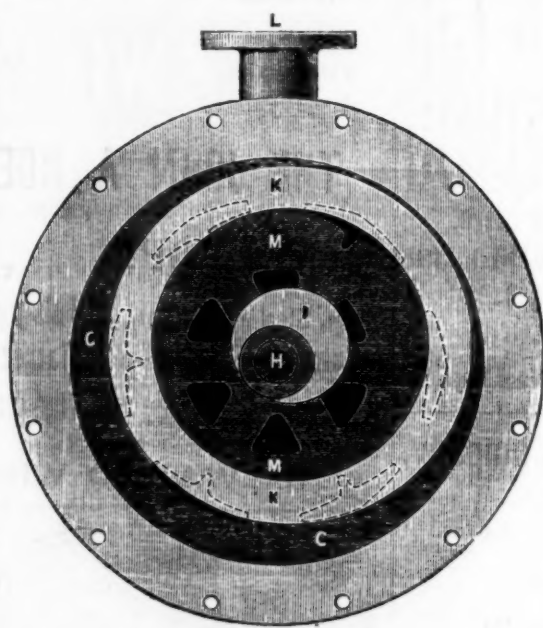


Fig. 3.

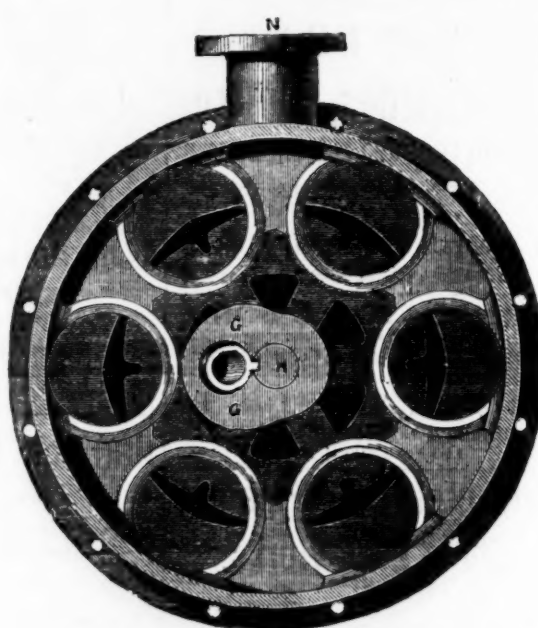


Fig. 4.

half stroke, but if specially ordered the cut-off can be altered to any point, from one-tenth to full stroke. Certain modifications in the details of construction are also made to suit special requirements.

During the past week we have had an opportunity of inspecting an engine of this class, built by Messrs. C. H. Delamater & Co., of the Delamater Iron Works, of this city, Thirtieth street and North River. The firm, we believe, have taken control of the United States patent and are preparing to build all sizes and styles.

We were much pleased with the quality of the workmanship of the engines. There was one point worthy of mention for which, however, we were not prepared, and that was the character of the wear of the surface in contact. One of the engines which had been running for some time had, at the time of our visit, been taken down for examination, and we had an opportunity to see all the bearings and wearing surfaces. Inspection showed that the friction of the "swash plate" upon the back-plate E is entirely due to a rolling motion. Upon the valve the wear

able position of the load the strain shall never exceed the following limits: For cast iron in direct tension, 1 1/2 kilogram per square millimeter, in flexural tension, 3 kilograms, and in compression 5 kilograms; for wrought iron or rolled iron in either tension or compression 6 kilograms per square millimeter. Designers must be able to show by detailed calculations that all pieces are so proportioned that these strains can never be surpassed; but the administration reserves the right to assign higher limits for very long bridges or in other special cases.

The rolling load to be used in computation is required to vary with the length of the span according to a tabulated scheme from which the following are a few values: 12,000 kilograms per linear meter is assigned for spans of 2 meters, 4100 for 40 meters, 3700 for 60 meters, 3200 for 100 meters and 3000 for spans of 150 meters and upward. These loads are for single track bridges.

Each span is to be subjected to two tests, one by a stationary load and the other by a rolling load. These are to be made by trains equal at least in length to the span to be tested, the locomotive with its tender

given in the schedule may be allowed in the computations.

For iron highway bridges the same limiting working strains are assigned. The computations must be made for the most unfavorable position of a uniform rolling load of 300 kilograms per square millimeter, or of vehicles closely covering the bridge and weighing, if on two wheels, 11 tons each, and, if on four wheels, 10 tons each, that being chosen which is the greatest. The sidewalks are to be proportioned for 300 kilograms per square meter. The tests are to be made by covering the bridge, sidewalks included, with a load equivalent to that employed in the computation and allowing it to remain two hours after all signs of settling have ceased, and also by the passage of loaded vehicles. The use of vehicles heavier than those employed in the computation is forbidden, except by special permission of the prefect.

The Clover Hill coal mines in the Richmond coal field, Chesterfield county, Virginia, owned and operated by the Bright Hope Railway Company, have recently un-

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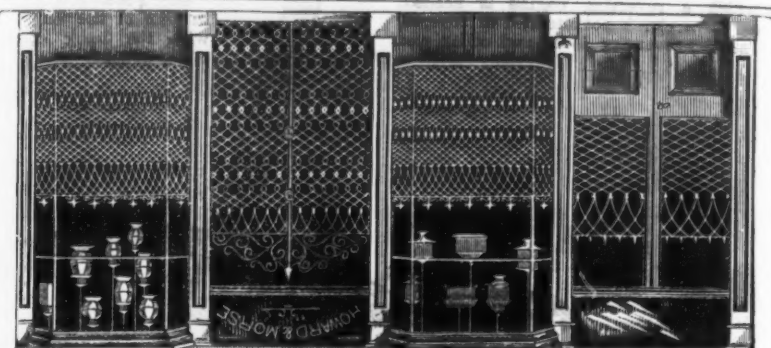
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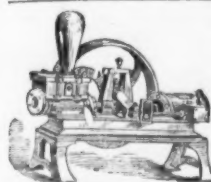
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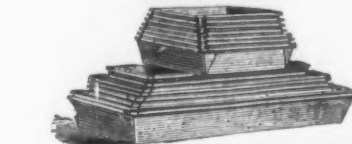
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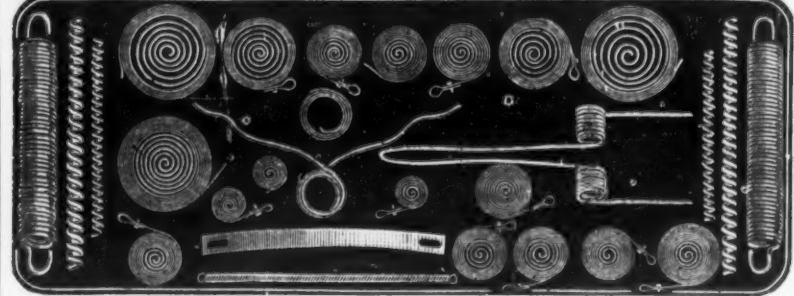
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This article is destined to revolutionize the sale of Stove Pipe. Fifty joints of 5 in. are securely packed in a case 10 in. square by 24 in. long, inside, thus occupying hardly more room than tin plate, and securing lowest rates of freight. Entirely made by machinery, every joint is exactly alike, and fits together with the greatest accuracy and ease. A child can adjust it, no tools being required. When put together it forms the strongest and most perfect pipe in the world. Over each of the rolls is drawn one joint of pipe to protect the others from dirt and moisture, thus keeping it in perfect condition always. The following are net cash prices, viz: 5 in. per joint, 10c.; 6 in. per joint, 12c. Other sizes in proportion, and made to order when desired. Packed 50 joints in a crate, for which no charge is made.

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The Chicago Stamping Co.
Nos. 79, 74 and 76 Lake Street,
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E. C. QUINBY, President. J. C. WHITING, Secretary.

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ESTABLISHED IN 1848.

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Sheet Steel

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SIEMENS-MARTIN (Open-Hearth) PLATE STEEL

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All our Plate and Sheet Steel being rolled by a Patented Improvement is unequalled for surface finish and exactness of gauge.

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For Shafts, Splines, Rollers, &c., &c.

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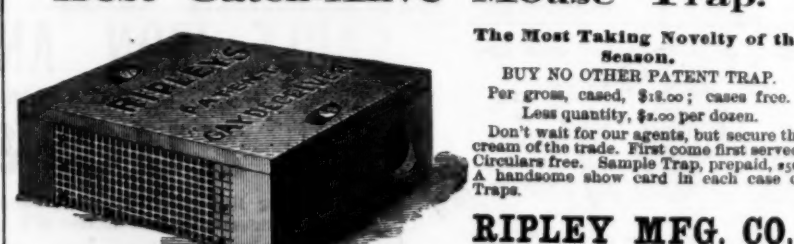
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HOGAN & BURROWS Gen'l Agents for Eastern and New England States.

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Best Catch-Alive Mouse Trap.



THE CELEBRATED DECOY TRAP.



E. OLIVER,
106 & 108 Beekman St., N. Y.,
Manufacturer of
Wire Cloth and Netting, Moulders' Riddles, Patent Decoy Kat Traps.
The Largest Screen and Flour Sieve Factory in the United States.

THE DUTY ON TIN PLATES.

Why the Rate Should be Reduced.

Messrs. N. & G. Taylor Co., of Philadelphia, have issued the following circular upon the proposed duty on tin plates:

By the act of February 8, 1875, the duty on tin in plates or sheets, terne and taggers tin was changed from 15 per cent. ad valorem to one and one-tenth cent per pound.

It was proposed at the time to make the new duty corresponding or equivalent to the ad valorem rate in force prior to the passage of the act.

In point of fact this was not the result of the change. Our next two importations (occurring February 13 and February 15, 1875) showed an average increase of 18 1/2 per cent. in the amount of duty paid, as compared with the amount that would have been chargeable at 15 per cent., and this, without there having been any fall in the invoice price of the goods to account for the contrast.

No provision being made for a decline or advance in prices, this duty accordingly is in varying proportion to the value of the article at the time of importation—but the amount of duty called for remains always excessive. In the case of our own importations the proportion of this excess has never been less than the amount indicated above; and as under a steady depreciation in price the difference between the cost of a box of tin plates and the weight continually widens, the present duty of 1.1 cents per pound is equal to 28 per cent., and the proposed duty of 1 per cent. per pound would be equal to 25 1/2 per cent. on an average invoice cost.

The use of low grade cheap plates is largely in advance of the amount consumed of the better or dearer qualities. Of the total quantity imported there is used:

For canning, about one-half. The cheap quality made is embraced in this use.

For roofing, about one-quarter. Mostly cheap plates.

About one-quarter for miscellaneous purposes and comprising most of the uses for which more or less superior grades are called for.

Obviously then, the present heavy specific duty is laid with most weight exactly where it can with the least ease be borne.

Tin plate will probably never be largely made in this country. The Welsh manufacturers have the advantage of the command of what may be styled cheap family labor. There the male workman is satisfied with 20 to 25 shillings weekly; and when he has a family, which he generally has, they add to his receipts in about the following amounts: His wife, 15 shillings, and with two or three children, who are extensively employed in the many light operations peculiar to this manufacture, the sum of his wages may amount to 50 shillings, or say \$12. So the maker gets the work of nearly three able hands for an amount that, in the supposed case of an American manufacturer, where circumstances that need not be enlarged upon here must infallibly cause such a result, would only enable him to obtain the labor of one man.

While tin plate has been made in this country for 20 years, and is an operation as far from thriving as ever, its manufacture has been for 200 years the leading industry of Wales, where, with their accumulation of experience and material and a command of low-paid labor, they possess an unconquerable advantage. Nothing but the establishment of an extraordinary tax upon its import will ever allow a home manufacture.

Terne or leaded plates are, it is true, made to a limited and ineffective extent by one establishment in Pennsylvania, but we have never heard that they make tin plates; and why they should look for special consideration in the adjustment of the tariff at the expense of 50,000 dealers, importers and consumers of this article, or expect to stand in the way of a generally desired reduction of the duty on tin plate that will, if effected, afford a new stimulus to the immensely valuable interests concerned in the exportation of canned provisions, we find it hard to say. A slight cheapening of tin plate to the hands of American dealers and manufacturers will unquestionably obtain this result.

The fall in prices at the works has been constant and severe. The following will explain:

MANUFACTURERS' SELLING PRICE PER BOX.

	Jan., 1875.	Jan., 1878.
Good charcoal plates.....	35/	20/
Ordinary coke ".....	27/	17/

This marked depreciation in price has overcome the additional cost to an American market caused by the imposition of an advanced duty, and has admitted the use of the article to an increased extent and added to the variety of purposes for which it is considered to be profitably available.

The exports from all ports of the United Kingdom to all United States ports is as follows:

	Boxes.
1875.....	1,673,435
1876.....	1,609,515
1877.....	1,943,444

For the last 30 years, viz.:

1848 to 1857.....	3,457,070
1858 to 1867.....	6,726,794
1868 to 1877.....	15,218,225

We think it can be safely deduced from the above exhibit of an unprecedentedly vigorous and healthy demand, occurring conspicuously in a period when languishing and expiring enterprises were frequent in all directions, that we ask in the lessening of the duty now laid upon it only the execution of a measure that will cause a fulfillment of our opinion, that the consumption of tin plate will be in such case immediately and greatly increased, and that among other things the revenue will be a gainer thereby.

These conclusions are the result of a business experience longer than common, and we hope may have some weight with those who are engaged in arranging the rates of duty to be laid on foreign products and manufactures.

We feel that the claim to consideration by the importer of an article from the entry of which the revenue is so greatly aided, is a fair one. We ask relief only from an unreasonably high duty and a protection of interests that can safely be given without

prejudice to any native investment or industry.

We recommend a reduction of the duty on tin in plates or sheets, terne and taggers tin, to three-quarters of a cent, per pound.

PHILADELPHIA, JANUARY 31, 1878.

Why the Industry Should be Protected.

To the Editor of The Iron Age: We have before us a circular by the N. & G. Taylor Company, of Philadelphia, which is evidently written in opposition to our petition to Congress for placing a duty on tin-terne and taggers tin plates equal to that on such similar metals by which the price of our labor is controlled.

We are well aware that American metal industries in general, and the tin-plate industry in particular, have a severe enemy in the N. & G. Taylor Company, for no sooner had it become known that tin and terne plates were made successfully in the neighborhood of Pittsburgh than N. & G. Taylor's agent came to Pittsburgh and offered to undersell the United States plates at the rate of about 25 or 50 cents per box, no matter what the prices of such plates would be. For this assertion we can bring plain proof, and we therefore deem it necessary to make this statement, in order to show where the patriotism of these gentlemen (who pretend, we suppose, to be American citizens) and their motives for this renewed attack come in.

Although some of the figures in their circular appear to be exaggerated in favor of their argument, we propose to meet them on their own figures.

In February, 1875, when the duty on tin plates was changed from 50 per cent. ad valorem to 1.10 cent per pound, the average price of tin plates was about 8 cents per pound, or \$9.00 gold, per box of 112 pounds; the duty having been made specific, naturally increased from 15 per cent. to (as N. & G. Taylor Company state) 28 per cent. in comparison to the value. Comparing the increase of the percentage ad valorem with the large decline in prices, we fail to see that any of our consumers had to suffer by this change. Why the N. & G. Taylor Company would prefer to fix the duty on the value, which the customs officers can in most cases hardly ascertain, instead of on the weight, which they can find out at once, we do not understand exactly, but we suppose they have their reasons for it.

Under a protective tariff our steel, iron and other metal manufacturers have been able to develop their industries to such an extent that foreign goods in their line have been driven almost entirely out of the market; let us have the same chance, and in less than 10 years the manufacture of tin plates will probably be one of the leading industries in this country. The duty on galvanized iron now is 2 1/2 cents per pound. The cost of making tin plate is nearly the same or more, and if the duty would be also made the same this increase would amount to about 5 cents per dozen quart fruit cans. Would this destroy the fruit canning business?

But we will use their own argument for our cause: "The Welsh manufacturers have the advantage of the command of what may be styled cheap family labor. There the male workman is satisfied with 20 to 25 shillings weekly; and when he has a family, which he generally has, they add to his receipts in about the following amounts: His wife, 15 shillings, and with two or three children, who are extensively employed in the many light operations peculiar to this manufacture, the sum of his wages may amount to 50 shillings, or say \$12. So the maker gets the work of nearly three able hands for an amount that would only enable the American manufacturer to obtain the labor of one man."

Verily with such wages we cannot and will not compete in this country, where a laboring man is enjoying the beauty of a good home and the pleasure of giving his children a good education, instead of being compelled to taking his wife and children with him to work in a rolling mill. Why, every tin-plate consumer in this country ought to shrink at the mere idea, and should not hesitate to pay a dollar more per box of plates which is made by free and independent American labor.

A skilled working man in our works is not only enabled to earn \$12 per week, but from \$15 to \$20, without the aid of his whole family, and, nevertheless, we have produced bright tin plates until the price went below our cost some short time ago, and today we are making terne plates and sell them at cost.

Obviously, then, if the Welsh manufacturers get their labor at about one-third the price we do, either they and our Eastern importers must have made immense profits at the expense of their poor laborers and American consumers during the time tin-plate manufacturing was not thought of in this country, or the effects of paying our laboring men good wages are so great that they will obtain double skill and do double the work of their depressed brethren in Wales.

It is only three years since we engaged in this enterprise, and already we can do almost all that the English manufacturers can do with their experience of 200 years; but we can't employ a man, his wife and three children for \$12 per week.

The N. & G. Taylor Company assert that they never heard that we had made bright tin plates, and yet their agent admired the beauty of our plates at the store of one of our customers; strange that he did not report this to his house when he knew that they dread so much to see any new industries developed in this country.

We do not propose to make any profits at the expense of 50,000 dealers and consumers, but we do intend to make them independent of the monopoly of importers and foreign manufacturers.

The N. & G. Taylor Company deem our business limited and ineffective, but their very figures show how effectively the intro-

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Successors to GANGL G. SMITH & CO.
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A full assortment constantly on hand of
Cast, Machinery, Tool, Spring, Tire, Sleigh
Shoe, Toe Calk, Plow and Blister Steel.
Orders solicited for
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"PICKS" of all kinds,
ESOPUS" HORSE SHOE IRON
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Tees, Channels, Sheets, Plates.
All descriptions in stock.

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SPRING STEEL,
ANGLE and T IRON.
Special Irons for Bridge and
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Refined Iron,
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Common Iron.
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Sheet Iron.
Norway Nail Rods.
Norway Shaes.
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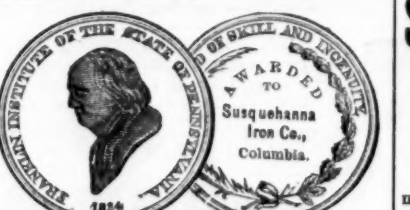
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**Siemens' Regenerative
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Facing. Best Quality Ingot Brass.
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Boiler Plate, Tank Iron, &c.,
PIG, BAR AND RAILROAD IRON.
Old Rails, Scrap, &c.
STORAGE WHARF & YARD.
DELAWARE AVENUE ABOVE CALLOWHILL STREET.
connected by track with railroad.
Cash advances made on Iron.

The Cambria Iron and Steel Works,
Having enjoyed for over TWENTY YEARS the reputation of producing the best quality of
RAILS,
have now an annual capacity of
100,000 Tons of Iron and Steel Rails, Splice Bars, &c.
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Manufacturers of
CURVED, STRAIGHT AND HIPPED
Wrought Iron Roof Trusses, Beams, Girders & Joists,
and all kinds of Iron Framing used in the construction of Iron Roof Buildings.
DECK BEAMS, CHANNEL, ANGLE AND T BARS
curved to template, largely used in the construction of Iron Vessels.
PATENT WROUGHT IRON COLUMNS, WELDLESS EYE BARS,
For Top and Bottom Chords of Bridges.
Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs.
REFINED BAR, SHAPING, and every variety of SHAPE IRON made to Order.
Plans and Specifications furnished. Address,
SAMUEL J. REEVES, President.

Kensington Iron & Steel Works.
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Manufacturers of
The Anvil Brand
REFINED IRON.
J. R. & Co. BEST
Rounds, Squares and Flat Bars, Bands,
Skelpes, Hoop and Horse Shoe Iron, Ovals,
Half Ovals, Half Rounds, Scrolls and Nut
Iron. An assortment of sizes constantly in
stock. Also Plow, Cultivator, Hoe and Shovel
Steel. Send for Price List.

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A. & P. ROBERTS & CO.,
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CAR AXLES.
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Office, No. 265 S. Fourth St., Philadelphia. Agents for the sale of Glamorgan Pig Iron.

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TRADE MARK.
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THE AURORA IRON AND NAIL CO.,
MANUFACTURERS OF
Sheet, Plate, Hoop, Bar Iron, Hot Pressed Nuts and Nails.
AURORA, Dearborn Co., IND.
O. P. COBB, President. **H. S. CAMPBELL, Secretary.**

NORTH'S PATENT
Universal Lathe Dog.
It is very strong. Holds very strong. Will not
deface finished work. Holds round, square or ir-
regular work. Always stands up square with the
work and will not "skew." Is more evenly bal-
anced than the common dog.
Send for circular.
SELDEN G. NORTH, No. 440 North 12th Street, Philadelphia, Pa.

duction of the industry decreased the price
of imported goods.

While the demand for tin plates increased
from 1,673,435 boxes in 1875 to 1,943,444
boxes in 1877, the prices declined from 35/
in January, 1875, to 20 in January, 1878.

Now we will repeat the closing sentences
from the circular, and only change a few
words.

"We think it can be safely deduced from
the above exhibit of an unprecedentedly vig-
orous and healthy demand, occurring
conspicuously in a period when languishing and
expiring enterprises were frequent in all
directions, that we ask in the increasing of
the duty now laid upon it only the execution
of a measure that will cause a further de-
velopment of an industry which has been so
successfully established, and that among
other things the revenue will be a gainer
thereby for at least 10 years to come.

"We hope our conclusions may have some
weight with those who are engaged in ar-
ranging the rates of duty to be laid on for-
eign products and manufactures.

"We feel that the claim to consideration
by the home manufacturer of an article on
which the duty has been so discriminately
low is a fair one. We ask relief only from
competition with pauper labor and the mon-
opoly of Eastern importers, and a protection
of interests that can safely be given without
prejudice to any native investment or in-
dustry.

"We recommend an increase of the duty
on tin, terms and taggers tin plates to 2 1/2
cents per pound."

U. S. IRON AND TIN PLATE CO.,
W. C. CRONMEYER, Sec'y.
PITTSBURGH, Feb. 12, 1878.

For the information of those interested in
the subject of the two communications
printed above, we append the following com-
parison of the rates of duty imposed on tin
plates since 1832:

DUTY ON TIN PLATES.	
1832 to 1842	free.
Aug. 30, 1842	2 1/2 cents per lb.
July 30, 1846	3 1/2 "
March 3, 1857	8 "
March 3, 1861	10 "
Aug. 5 to Dec. 24, 1861	10 "
July 14, 1862, to Aug. 1, 1872	25 "
Aug. 1, 1872, to Feb. 8, 1875	15 "
Present rate	2 1/2 cents per lb.

**Present and Proposed Duties on Iron
and Steel.**

BY LORIN BLODGET.

Schedule E—Metals.—After a few enumer-
ations of items, all iron and steel are put at
35 per cent. Nearly everything is reduced,
and the average of proposed duties is about
30 per cent.

Pig iron.	Now.	Proposed.
Scrap, cast.	\$7 1/2 ton.	\$5 1/2 ton.
Scrap, wrought.	\$8 "	\$6 "
Iron ore.	20 "	15 "
Sheet, under 20 w. g.	14 1/2 "	10 1/2 "
Sheet, 20 to 25 w. g.	15 1/2 "	11 1/2 "
Sheet, over 25 w. g.	16 1/2 "	12 1/2 "
Smooth or polished.	30 "	25 "
Tagger's iron.	30 1/2 "	25 1/2 "
Steel rails.	14 1/2 "	10 1/2 "

All other forms of iron and steel now pay-
ing various specific rates are by the pro-
posed bill to pay 35 per cent. ad valorem.

On the basis of the importations of 1876,
ordinary pig iron paid 29 per cent. at \$7 per
ton; at \$5 per ton it will pay 20 1/2 per cent.
Spiegelisen then paid 17 per cent.; it would
pay 12 per cent. at \$5 per ton. Scrap cast
paid 50 per cent. at \$6 per ton; it would
pay 12 per cent. at \$1 per ton. Scrap
wrought paid 45 per cent. at \$8; it would
pay 5 1/2 per cent. at \$1 per ton duty, as pro-
posed. Old rails imported as scrap at \$1 per
ton would stop the production of pig
iron and silence half the furnaces now in
blast. It is noticeable that iron ore is
charged with increased duties, the average
per ton at 20 per cent. is equal to 30 at 50
cents per ton; so that the proposed rate is
double the present.

Polished sheet iron paid 32 per cent. at 3
cents per pound in 1876; it would pay 11 per
cent. at 1 cent per pound, as proposed.
Common or black sheet iron paid 35 per
cent. at 1 1/4 to 1 1/2 cents per pound in 1876;
at one-half those rates, as proposed, it would
pay 17 per cent. only. Steel rails paid 39
per cent. at 1 1/4 cents per pound; at 1 cent
they would pay 30 per cent.

The most absolute confusion would result
from making all the present specific rates on
iron and steel 35 per cent. ad valorem, as
proposed, since the calculated equivalents of
1876 could not be relied upon at all. Bar
iron, as calculated, ranges from 35 to 47 per
cent. under specific rates of 1 to 1 1/2 cents
per pound; if made ad valorem at 35 per
cent. the specific equivalent would be 1/2 to
3/4 cents per pound only. The importation
of iron generally is now so light that the
equivalents are not easily calculated; they
vary from 30 to 60 per cent., but the invita-
tion to undervaluation would be strong, and
the leading items would be much reduced
from their specific rates.

Steel would pay much less than now at 35
per cent.; that at 2 1/2 cents per pound now
is equal to 44 per cent. ad valorem; that
paying 3 cents is at 30 per cent. Manu-
factures of steel now at 45 per cent. constitute
the largest items of importations, and would
be reduced to 10 per cent. Steel tires now im-
ported at an invoice value of \$47 the ton
would pay 7-10 cent per pound, instead of
3 cents, as now. At the present specific and
mixed rates saws average 40 per cent.; files
45 per cent.; and cutlery 50 per cent. The
reduction would be material, although the
present importations are small.

The detail of enumerations being dropped
in this bill, it is not easy to say what clas-
sification would be claimed for cutlery, and
steel and iron tools, saws, handled imple-
ments, fire-arms, &c. They are not exclu-
sively of iron or steel, and in many cases
not chiefly of either. Having always been
designated in the tariff laws, the omission to
name them would probably leave them out
as free.

By Section 21 it is provided that all iron
or steel employed in shipbuilding may be
imported free of duty; a measure far more
damaging to the iron interests than it can
possibly be beneficial to shipbuilding.

The reduction of revenue from the changes
on iron and steel can only be estimated.
Unless it should be increased by an increase
of importations, there would be a probable

loss of \$250,000. On pig iron alone the loss
would be \$130,000 on the basis of 1876. The
entire business of the country in iron and
steel, both of importation and of manufac-
turing in competition with importation,
would be thrown into confusion for want of
definite elements of the calculation. Stocks
imported at specific rates of duty would be
put in jeopardy by new consignments at less
rates, and neither the present importer nor
the competing manufacturer could at once
learn what to do with safety.

The following prices of iron in England,
per ton, as shown by actual sales reported in
recent numbers of the trade journals, will
represent the duty payable on these impor-
tations here under the provisions of Mr.
Wood's bill:

Cleveland ship plates, £6. 2/6 = \$20.51 @
35 per cent. = \$10.43 = 46.1 cents per
pound.

Cleveland sheets, £7. 10/ = \$36.40 @ 35
per cent. = \$12.77 = 1/2 cent per pound.

Durham bars, £5. 12/6 = \$27.38 @ 35 per
cent. = \$9.58 = 42.1 cents per pound.

Lancashire bars, £6. 5/ = \$30.42 @ 35 per
cent. = \$10.64 = 47.1 cents per pound.

Staffordshire bars, £6. 7/6 = \$31.03 @ 35
per cent. = \$10.86 = 48.1 cents per pound.

Staffordshire puddled bars, £4. 17/6 =
\$23.72 1/2 @ 35 per cent. = \$8.30 = 37.1
cents per pound.

Best marked bars, £8. 10/ = \$41.36 @ 35
per cent. = \$14.47 = 65.1 cents per pound.

Hoop iron, £8 = \$39.93 @ 35 per cent. =
\$13.62 = 60.1 cents per pound.

Angle iron, £6 = \$29.20 @ 35 per cent. =
\$10.22 = 46.1 cents per pound.

Ordinary merchant bars, £5. 10/ = \$26.75
@ 35 per cent. = \$9.36 = 41.1 cents per
pound.

Belgian bars, £5. 4/ = \$25.30 @ 35 per
cent. = \$8.85 = 39.1 cents per pound.

Belgian nail rods, £5. 6/ = \$25.79 @ 35
per cent. = \$9.03 = 40.1 cents per pound.

Best Swedish bars, £10. 10/ = \$51.09 @ 35
per cent. = \$17.88 = 80.1 cents per pound.

Belgian No. 1 bars, £6. 16/ = \$33.09 @ 35
per cent. = \$11.58 = 51.1 cents per pound.

These citations from actual and recent
sales will suffice to show how completely the
proposed rates would sweep away the pre-
sent protection, and would put all forms
of merchant iron at an average of one-half
cent per pound duty; with extremes from
three to eight-tenths of a cent per pound.

The bill retains specific duties for steel
rails, but puts all other steel and manufac-
tures of steel at 35 per cent. By the present
law steel in bars, sheets and wire pays
specific rates per pound of 2 1/2 cents, 3 1/2
and 10 per cent.; and steel manufactures
not enumerated, 45 per cent. ad valorem.
The equivalent of the specific rates is 30 to
48 per cent.; the great body of imports
being steel not over 7 cents per pound in
value, and which paid in 1876 the equiva-
lent of 44 per cent. ad valorem, and in
1877, 45 1/2 per cent. The quoted sales of
steel are now very low; spring, plow and
shovel steel being down to £11 and £12
in many cases. The following are recent
sales:

Spring steel, £12 = \$58.40 @ 35 per cent.
= \$20.44 = 91.1 cents per pound.

Steel axles, £10 = \$48.60 @ 35 per cent.
= \$17.03 = 76.1 cents per pound.

Steel tires, £12 = \$58.40 @ 35 per cent.
= \$20.44 = 91.1 cents per pound.

£22.14 = 95.1 cents per pound.

Bessemer tires, English, £11 = \$53.53 @
35 per cent. = \$18.83 = 84.1 cents per lb.

Bessemer billets, English, £7. 10/ = \$36.40
@ 35 per cent. = \$12.77 = 1/2 cent per lb.

Belgian Bessemer tires, £8. 2/ = \$38.93
@ 35 per cent. = \$13.71 = 51.1 cents per lb.

Belgian Bessemer tires, £8. 16/ = \$42.82
@ 35 per cent. = \$14.98 = 66.1 cents per lb.

German Bessemer, Krupp, £10 = \$48.66
@ 35 per cent. = \$17.03 = 76.1 cents per lb.

The present duty on steel of these values
is 2 1/2 cents per pound on all bars, ingots
and billets, 3 cents per pound on tires and
45 per cent. on axles.

A large amount of steel would thus come
in at one-half cent to one cent per pound,
all of which now pays 2 1/2 cents or 45 per
cent. On steels of this class the reduction
would be over 50 per cent. of the present
duties.

On the next higher grade of steel,
costing £35 to £45 the ton, the rate of 35 per
cent. would exceed the specific rate, the
equivalent being about 30 per cent. But
steel of this class is declining in importation,
and the next or highest rate has almost
ceased to be imported. In 1876-7 the im-
ports were:

Lbs.	Value.	Duties.
Steel not above 7 cts.	7,614,394	\$177,925 \$171,329
" over 7 and not over 10 cts.	5,080,374	503,779 524,458
" over 10 cts.	811,609	109,633 39,395

The equivalent ad valorem rates were 45
per cent., 30 and 36 per cent. for the three
classes respectively.

Of the enumerated classes of iron and
steel manufactures, the importation, though
once very large, has generally become small
and somewhat irregular. The most of these
pay specific rates higher than the equivalent
of 35 per cent., or ad valorems above that
rate. To reduce all to 35 per cent. would
first cause a loss of revenue, and possibly
next an increase of importations. Pocket
cutlery now pays 50 per cent.; the importation
in 1876-7 was \$608,380 in value; there
would be a loss of duty by a reduction to 35
per cent. of \$91,258. Other cutlery now
pays 35 per cent. ad valorem; it was im-
ported to the value of \$202,257 in
1876-7. Files are not largely imported;
they pay specific and mixed rates equivalent
to 45 and 50 per cent. ad valorem. Needles
pay 25 per cent. now; \$326,869 in value was
imported in 1876-7; at 35 per cent. there
would be an increase of \$36,287 in the
revenue. Saws are very little imported,
the entire value in 1876-7 being but \$515, at
specific rates equivalent to 45 per cent.
Fire arms would be unchanged at 35 per
cent. Steel wire pays mixed rates not ex-
ceeding the equivalent of 30 to 35 per cent.;
but the entire importation was only \$165,000
in the last year. Unenumerated manufac-
tures of steel reached \$694,375 in value at
45 per cent.; the reduction would cause
a loss of revenue of \$104,150, or the worse
alternative of a large increase of importation.
Such is the superiority of many of
these articles as made in the United States,
that to reduce the duty would reduce the
revenue without much increasing the im-

portation. Steel tires and axles would,
however, be brought in more largely, and
would seriously injure producers here as a
consequence of reducing the duty to less than
one cent. per pound.

The proposed changes would cause ex-
treme confusion to every interest affected;
to the importers of foreign iron and steel
as well as to manufacturers in the United
States.

The Law of Wages.

Political economy has been for some time
in bad repute with philanthropists of the
impulsive school, and the science is regarded
by many well-meaning but ill-informed
persons as a stepmother of the poor and as
a wet blanket to the benevolent affections
of humanity. Even Mr. Carlyle styles it
"the dismal science," and other inferior
authorities have pelted it with opprobrious
epithets. All these, however, do not get
rid of the fact, which will continue to exist
by whatever name it is called and however
much it may be disliked. In truth, it would
be no more presumptuous to attempt to steer
a ship in ignorance of the known rules of
navigation than to undertake to settle the
questions that perpetually crop up in rela-
tion to capital and labor without regard to
the principles that underlie the despised
science of political economy. It cannot be
doubted that, although individual men
sometimes act from purely generous pur-
poses, the bulk of mankind in their mutual
dealings are influenced by dictates of self-
interest. There is a legitimate sphere for
the exercise of benevolent sentiments, and
scarcely a month passes without some catas-
trophe calling forth, on a larger or smaller
scale, the kindly sympathies of our nature.
But the fact remains, and it is a happy thing
for society at large, that the normal condi-
tion under which industry is promoted and
commerce is carried on, depends not upon
liful impulses, but upon deeply-seated and
wide-spreading laws. However trite it may
appear to say so, it is necessary to repeat the
well-worn dogma that labor is a commodity,
the value of which must be regulated by
supply and demand. Hence the utter folly
as well as the inutilty of all attempts to fix
a minimum rate of wages, or to set up any
rigid standards by which the amount can be
regulated. In the oft-quoted language of
Adam Smith, "It is a good time for labor
when two masters are running after one
workman, and it is the reverse when two
workmen are competing for one master."

There are only two methods by which the
rate of wages can be raised; either the in-
crease of work or the diminution of workers.
Employers would not dream of offering
higher wages than the laborer is willing to
take. The former would no more think of
paying their hands more than is asked, then
they would think of paying the grocer and
baker more than they demand for their
commodities. In each case the existing
market value regulates the price. If there
be a plethora of labor in one trade, or in one
district, wages will inevitably tend down-
ward until the surplus workers find em-
ployment elsewhere or in other trades.—
London Capital and Labor.

**A New Style of Sleeping Carriages in
England.**—Next week (says the Bristol Post)
the Great Western Railway Company pur-
pose introducing on their line, in connection
with the limited mail, 9 p. m., from London
to Penzance, and the corresponding up train,
a new style of sleeping carriage, the inven-
tion and design of Mr. Holden, manager of
the carriage department at Swindon. For
the present there will be only one of these
new carriages attached to each of the above-
mentioned trains. Each carriage will be
divided into two compartments. The larger
of the two is arranged for gentlemen. It is
lofty, spacious and well ventilated. It con-
tains seven seats, lined and backed with
morocco; all the furniture is of walnut, with
gilded moldings and ornamentation. By
merely lifting a brass handle above the head
the back of the seat comes down, providing
a soft spring bed, with a canopy of white
satin reppe. Even when all the beds are out
there is plenty of room for walking about.
The windows are unusually large, and are
fitted with green satin curtains. In connec-
tion with the compartment is a lavatory and
every requisite convenience. Overhead is a
new arrangement for regulating the venti-
lation, and when the occupants have retired
to rest the light can be instantly covered
without being extinguished. The second
compartment is fitted up with precisely the
same convenience for ladies, and will accom-
modate four. Both compartments are fur-
nished with handsome Brussels carpets, and
look more like small drawing rooms than
ordinary railway carriages.

Armstrong Guns.—Experiments are in
progress with two new field guns, designed
and manufactured by Sir William Arm-
strong, at Elswick, and the trial is regarded
as peculiarly interesting, as it may decide
the much debated question of muzzle versus
breech loaders. Both guns are precisely
alike in weight, rifling, and all other re-
spects, except that one is a muzzle loader
and the other a breech loader. The rifling
is a polygon of eight grooves, corres-
ponding with the experimental 12 pounder
of the Royal Gun Factories, and, like that
gun, both these are chambered. They are,
however, constructed to fire 13-pounder pro-
jectiles, which the government gun is
equally capable of doing, and, as far as the
experiments have gone, they have not
developed any special advantages. The 12-
pounder, indeed, with a lower charge, has
obtained an equal velocity, and if it can be
advantageously used as a 13-pounder, this
will be done. The relative merits of the
breech and muzzle-loading system are found
to remain much as they were, both guns
having given similar velocities at the proof
butts, but they have yet to be tried against
the targets at Shoeburyness to settle their
relative accuracy and other important
points. It is considered doubtful still
whether the simplicity of the muzzle loaders
is outweighed by supposed advantages of
cover afforded by guns loading at the breech,
a point which can only be practically settled
by experience in the field.

Exclusive Manufacturers of L. C. Stephen's
Rules graduated in foreign measure to order.



W. S. BLUNT'S Universal Force Pumps.

Secured by Letters Patent.
These pumps have enormous power, and are for the house or for out-door wells of any depth. They are constructed with special regard to strength, ease of working and durability. They can be immediately changed from lift to force pumps, and the air chamber can be revolved, so as to allow the handle to work at any desired angle with the pump. Having close joints, they cannot be tampered with. Attention is called to our new elegant pattern, Deep Well Non-Freezing Fire Pump. Also, Blunt's Sand Vacuum Chambers—a complete protection against sand or gritty water in dug or driven wells, pits, mines and rivers. For hand or steam pumps, all sizes, from 1/4 inch to 4 inch suction pipes. Send for circulars to W. S. BLUNT, 71 Fulton and 71 Beekman St., New York. Western Agency—Newton & Hale, Chicago. Pacific Coast Agency—Dunham, Carrigan & Co., San Francisco, Cal.



PATENTED
May 30th, 1876, Feb. 27th, 1877, July 3d, 1877.



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S. C. EATON, M. D., Analytical Chemist at U. S. Assay Office.
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HENRY MORTON, Prof. Bureau of Technology, Hoboken, N. J.
EDWARD S. WOOD, Prof. Chem., Harvard Med. Coll., Boston, Mass.
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UNION MANUFACTURING COMPANY,

Manufacturers of all styles Plain and Ornamental Butts,

LOOSE PIN REVERSIBLE, Cast Fast & Loose

Drilled and Wire Jointed.
Japanned, Figured Enamelled, Nickel Plated
and Real Bronze Butts. Also a full line of

IRON & BRASS PUMPS.

Cistern, Well, and Force Pumps, Yard, Drive
Well, Garden Engine and Steam Roller Pumps,
Hydraulic Rams, etc., and all with the most modern
improvements.

Centennial Spring Hinges.

This Hinge has two flat coil springs, very powerful. It has a heavy solid pintal, giving much less friction than a hollow pintal. It has broad, solid bearings in the knuckle, which do not wear down readily and let the door sag. It is Fast Joint, therefore can be used for either right or left hand. By actual test it has an average of 50 per cent. more power than other Spring Hinges in common use of same size.

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Government and Giant Padlocks,
Sewing Machine Locks,
Automatically Made Sash Chains,
Sash Fixtures.

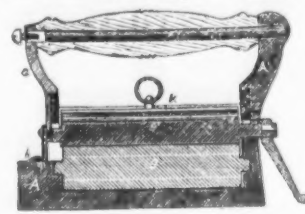
Specialties in Hardware and Light Metallic Goods generally.
SPECIAL LOCK COMBINATIONS.
P. O. Lock Box No. 105. BRIDGEPORT, CONN.

New Patents.

We take the following abstract of new patents, recently issued, from the official record:

FLUTING IRON.

To J. H. Cleveland, Buffalo, N. Y.—Nov. 6.—1. As a new article of manufacture, a combined sad and fluting iron, consisting of a recessed base A, having the slotted rear

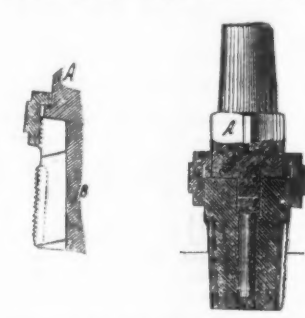


support A', provided with a fixed handle-rod F, front support G, attached to said rod with one end and provided with the pivoted connecting piece g, having the projection g' engaging with the catch h on said base on the other end, and two fluting rollers B B', of which the upper one is provided with a bail K, and handle C.

2. In a combined sad iron and fluter, a front support and guide piece for the upper roller, said support being removably attached to a stationary handle-rod, and provided with a recess for the pivot of said roller and with a brace g, pivoted to said support, and provided with a projection g', engaging a catch h, on the base of said iron.

SCREW TAP.

To James Cook, Brooklyn, N. Y.—Nov. 6.—1. The combination, in a screw tap, of a stock, a barrel provided with a screw-thread at its inner end, a series of frames fitting



into recesses in the barrel, and provided with segmental screw-threads at their inner ends, detachable cutters which fit said frames, and a nut which catches over a flange or shoulder on the stock, and which fits the screw-threads of the barrel and of the cutter-supporting frames.

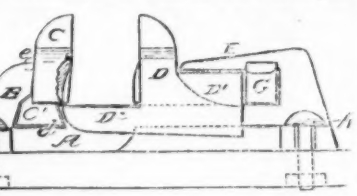
2. The combination, with the stock A and barrel B, of cutter-supporting frames provided with oblique recesses for the reception of the cutters, the ends of said recesses being parallel to each other.

SNAP HOOK.

To Geo. D. Mosher, New Hartford, Conn.—Nov. 13.—In combination, the body a, the pivoted tongue b, bearing the horn d', projecting downwardly and rearwardly, and the helical spring c, borne upon said horn, and provided with the finger or leaf e', bearing and sliding upon the bottom of the socket c.

VISE.

To A. H. Bell, Belle Plain, Iowa.—Nov. 13.—Bolts the bed of the vise to a lever, and



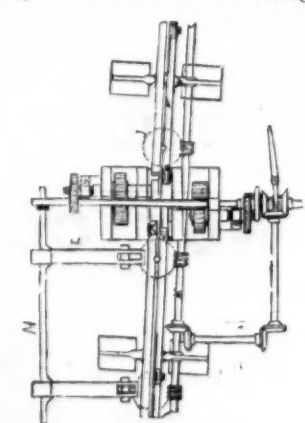
uses as wire-tightener. Clamps wire in vise and places end of lever against the end or stretching post, draws taut, and secures with staple.

1. The combination of the bed A, provided with the top B and dovetailed tapering groove d, and the jaw C, provided with the dovetailed tapering tongue C', sliding jaw D, and the stop e.

2. The sliding jaw D, provided with the extension D' and arms D' D', in combination with the bed A, hook E, and stationary jaw C.

3. The combination of the grooved bed A, with hook E and lip B, the detachable stationary jaw C, the sliding jaw D, with extension D' and arms D' D', and the key G.

MACHINE FOR ROLLING TUBES AND BARS.
To J. O. Butler and Ambrose E. H. B. Butler, Kirkstall Forge, Leeds, England.—Nov. 13.—1. In a machine for rolling and



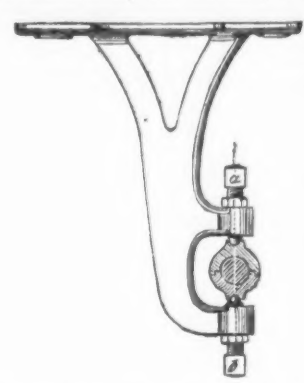
straightening bars or tubes, the combination of the separate grooved tables F, having guide blocks for supporting the bars or tubes laterally, the vertical guides H, the screw-shafts J, located beneath the tables and provided with worm-wheels j, the worm-shaft K, having worm-pinions k, and the rotating disks.

2. The reciprocating horizontal bars or tables L L, provided with holes to receive pegs, the crank shaft M, and connecting rods or links, substantially as shown and described, for the purpose of revolving the bars or tubes while hot or cooling, to prevent their warping.

3. The method herein described for preventing bars or tubes from warping while cooling, consisting in imparting a reciprocating rotary motion to the same, a rectilinear reciprocating motion of the bed whereon they are supported.

SHAFT HANGER.

To P. Perybil, New York, N. Y.—Nov. 13.—The combination, with the hanger, of the



screws a and b, and the box constructed with a center seat for one of said screws, and an oblong arc-bottomed seat for the other of said screws.

The following label was registered during the week ending Oct. 16: 1203.—Title: "Flat Iron Polisher."—Rowe & Co., New York, N. Y.

Relative Cost of Water and Steam Power.*

BY HENRY F. M. BIRKINBINE.

When erroneous statements are put into print it is almost impossible to correct them. An evidence of this is presented in an assertion contained in the article under the above head, in the *Journal* for December, page 388: "The cost of raising water by water power at the Fairmount works in Philadelphia is but two cents per one million gallons, raised one foot high."

In an article published in the *Journal* for May, 1876, page 323, the commercial value of Fairmount water power is presented, and figures given, taken from the reports of the Water Department, which show that, as compared with steam, the water pumped by the water-power works was, at a cost of from \$13,000 to \$19,500 per annum above what it would have cost to have done the work by steam, with pumping engines of the same average efficiency as those in the works.

The two cents referred to as the cost of raising one million gallons one foot by water power, were expended for simply running the works, that is, attendants, oil, tallow and ordinary repairs; it does not represent the entire cost of operating the works; it leaves out of consideration the extraordinary repairs incident to water powers—those of maintaining the dam, head race, gates, &c.

The water power at Fairmount has cost the city of Philadelphia between one and one and a quarter millions of dollars for water rights, damages, dam, head race, mill houses, wheels and pump. The precise cost is difficult to ascertain, as many of the expenditures were made in connection with other work. Taking the interest of one million dollars (\$60,000) as the usual cost of the power, and dividing it by the water pumped in 1876, 8,374,657,743 gallons lifted into the reservoirs, it will show that the power alone cost over eight cents per million gallons, lifted one foot. To this must be added the running expense, two cents, and also the cost of extraordinary repairs incident upon maintaining the dam, head race, &c. It is therefore evident that the cost of raising water at Fairmount by water power is between 10 and 12 cents per million gallons, one foot.

The water power on the Schuylkill, next above Fairmount, at Manayunk, owned by the Schuylkill Navigation Company, and leased to eighteen different manufacturing establishments, has a power equal to 1000 horses, and for this power the company receives a yearly rental of \$43,100, or \$43.10 per horse-power per annum. Even at this low figure, it is a question which is the cheapest, water or steam, when the annoyance of low water, floods and interferences of the navigation are taken into account. Were this power now unoccupied, the yearly rental would not warrant its utilization simply for a water power.

Since the steam engine has been brought to the degree of perfection in simplicity, efficiency, economy and reliability that we now have it, there are few locations in the thickly settled portions of our country where fuel can be procured at a moderate price that water power will be found cheaper or more desirable than steam power. This is particularly the case where the water power is unfavorably located, and where the trouble incident to drought, floods, &c., is taken into account. There are unimproved water powers in this vicinity, and many which have been improved are now unemployed and allowed to go to decay.

Philadelphia, December 13, 1877.

The New Haven Engineering Society has adopted a petition, to be presented to the General Assembly, praying for the enactment of laws providing that the Railroad Commissioners keep a record of the particulars of their inspections of railroad bridges; that the Railroad Commissioner, who is a civil engineer, shall inspect twenty bridges in 1878 and thirty every succeeding year; that any railroad before putting up a bridge shall file with the Commissioners complete specifications and plans, and obtain a permit to erect the same.

* A communication to the *Journal of the Franklin Institute*.



USE THE BEST.

NEW



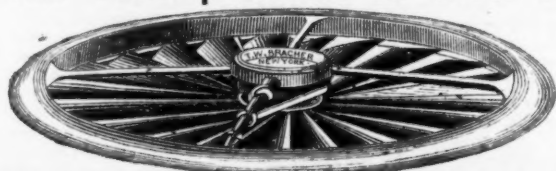
THE NEW AMERICAN FILE COMPANY have the exclusive right to use the Bernot process for cutting Files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing Files and Steel.

NEW AMERICAN FILE CO., Pawtucket, R. I.

AUBURN FILE WORKS,
Superior Hand-Cut
FILES AND RASPS,
MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.
FULLER BROS., Sole Agents,
89 Chambers and 71 Reade Streets, N. Y.

CHARLES B. PAUL,
Manufacturer of HAND CUT FILES.
Warranted **CAMPTON** L. 187 Tenth Street, Williamsburgh, New York.
All descriptions of Files made to order. Price List mailed on application. Established 1863.

Steam and Frost prevented on Show Windows.



REVOLVING VENTILATORS

For everything (and every size), from a hat or cap to an exhibition building. Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has storm cap. Retail price, size six inch diameter, \$1.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room. Prof. A. L. Loomis, M. D., University of City of New York, writes as follows: "From my personal experience and that of my patients who have used your Ventilator during the past six months, I am convinced that your method of removing dust, impurities and dampness from the atmosphere is the best which has as yet been proposed. By it the air in an apartment can be constantly changed without causing drafts. I would especially recommend its adoption in sick rooms, sleeping apartments, nurseries and school rooms."

Air Filters and Moisteners, placed over hot-air registers of furnaces, &c., prevent dust and supply steam filtered air. Prices and discounts to the trade sent on application.

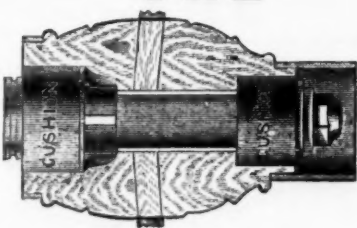
The "Economy" Molding Weather Strip is perfect in every respect. By enlarging edge of rubber or felt, and making slot in molding to correspond (see engraving) we save all after expense of molding. Once purchased it will last a lifetime, because rubber, etc., has only to be removed by taking old piece out of either end of molding, and sliding in a new piece. By this method of securing rubber all uncertainty of fastening or undoing of glue or tacks is overcome. Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Mouldings, &c., and thus make perfect Weather Strips.

No. 6.



BRACHER VENTILATOR CO., No. 3 Park Row, New York.

THE RUBBER-CUSHIONED AXLE



Assures in its Use
SAFETY, COMFORT AND ECONOMY.

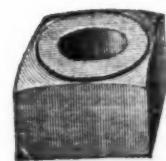
Vibration, Jolting, Pounding and Noise largely decreased, reducing Wear and Tear to a minimum. Approved and endorsed wherever used. Correspondence solicited.

THE RUBBER-CUSHIONED AXLE CO.,
Broadway and 43d Street, (Long Acre), - - - NEW YORK.

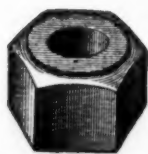
STANDARD NUT CO.,

Pittsburgh, Pa.,

MANUFACTURERS OF



HOT PRESSED Square & Hexagon Nuts,



R. R. FISH BARS,

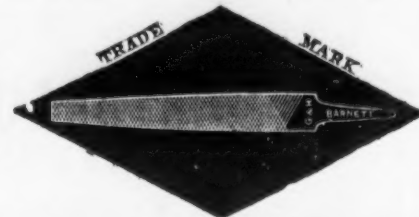
BOLTS,

SPIKES,

RIVETS, &c.



Black Diamond File Works.



Awarded by Jurors of Centennial Exposition, 1876, for "VERY SUPERIOR GOODS."

G. & H. BARNETT,
39, 41 & 43 Richmond St., Philadelphia.

ESTABLISHED IN 1816.

NO CONNECTION WITH ANY OTHER HOUSE.

PETER A. FRASSE & CO.,

No. 95 Fulton Street, New York.

AGENTS for the American Screw Co.'s Machine Screws and Taps.

SOLE AGENTS Thos. Turner & Co.'s, Files, Horse Rasps.

" " Hubert's French Emery Paper.

IMPORTERS OF STUBS' Files, Too's, Steel Wire.

" " GROBET'S Fine & Viss Finishing Files.

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DEALERS IN Scroll Saw Machines, Bracket Saws, Wood and Patterns.

Quality Unsurpassed.

Every File Warranted.

THRIFT FILE WORKS.

To the Hardware Trade.—
GENTS: We desire to call your attention to our brand of HAND-CUT FILES. The files we offer are of equal quality, and made by the same process as those manufactured by Stubs, Butcher, Spencers and others, of Sheffield, England, and we shall so continue to manufacture them until we become satisfied that the American Market demands an inferior File at a lower price, which can only be produced by



the introduction of machinery for cutting, which, to this time, we have not thought advisable to introduce in our works, as our files have been tested by the largest and most experienced consumers, who have decided the great superiority of HAND-CUT over Machine-Cut Files, and advise us to continue the original process of CUTTING BY HAND as the only method of producing a first-class and strictly reliable article.

R. H. HOWARD & CO., Nos. 428 & 430 Ireland St., Phila.

AUSABLE HORSE NAILS
POLISHED OR BLUED.
HAMMERED AND FINISHED



The Ausable Nails

Are Hammered Hot,

And the Finishing and Pointing are Done Cold,

Thus Imitating the Process of Making Nails by Hand.

Quality is **Fully Guaranteed.**

For Sale by all Leading Iron and Hardware Houses.

ABRAHAM BUSSING, Secretary,
35 Chambers St., New York.

FILES & RASPS,

Best Cast Steel.
HAND-CUT. Manufactured by
JOHNSON & BRO.
No. 1 Commercial Street, Newark, N. J.

ESTABLISHED 1860.
Chas. Spruce & Co.,
Manufacturers of HAND CUT
FILES AND RASPS.
Every File warranted.

CHALMERS & MURRAY,
Sole Agents, 76 Reade St., New York.

HORSE RASPS AND FILES.



We invite the attention of the trade to our Celebrated American Horse Rasps & Files, made from the very best American Steel, all cut by hand, and warranted to give entire satisfaction. All Rasps & Files not stamped as the American Market demands an inferior File at a lower price, which can only be produced by



Government Standard, Hot Forged
Hammer Pointed
HORSE SHOE NAILS.

Made from the best of Norway Iron, and warranted never to split or sliver in driving.

PUTNAM NAIL CO.,
NEPONSET, MASS.

SPENCER & UNDERHILL,

94 Chambers St., N. Y., Agents for
American Screw Co.'s Wood, Machine and Rail Screws, Stove and Tire Bolts, Rivets, &c.
O. Ames & Sons, Shovels, Spades and Scoops.
A. Field & Son, Tacks, Brads, Nails, &c.
G. F. Warner & Co., Carriage Clamps.
We have also on hand a general assortment of Hardware.



Patented July 31, 1877.
For sale at all the principal Hardware Houses in New York and elsewhere, also in the Manufacturer's Office, 24 Dey St., New York.



L. SALOMON,
Commission Merchant
IN
House Furnishing Goods.
Agent for the
Champion & Knox No. 99 Fluting Machines.
EUREKA & PEERLESS WRINGERS.
100 Chambers St., New York.

CHAS. E. LITTLE, 59 Fulton St., N. Y.



Solid Cast Steel Augers & Reamers
For Boring 1" to 1 1/2" diam. All sizes in stock.
Socket Shank, Ring Handles, and Connecting Rods for the above to order. Also Tensioning Tools for jointing log ends. Coopers' and Sinters' Tools. Tool Chests. Tools for all trades a specialty.

STRUBEL & WEISBRUDY
DESIGNERS
AND
ENGRAVERS OF WOOD
ESPLANADE BUILDING
SE. Cor. 5th & Walnut Sts.
CINCINNATI O.



Price, \$5.00.
In Morocco Case,
\$6.00.

MICROMETER CALIPER,
Made by THE VICTOR SEWING MACHINE CO.,
Middletown, Conn.

This attractive and very desirable tool will be found more reliable and convenient than the Vernier Caliper, and to Machinists and Tool makers it is indispensable on work requiring very accurate and close measurement. Its capacity is one inch, and is graduated to one thousandths, but can readily be set one-half and quarter thousandths; and is so constructed that any wear resulting from use can be readily adjusted.

A. FIELD & SONS,

TAUNTON, MASS.,

MANUFACTURERS OF

Copper and Iron Tacks, Tinned Tacks, SUPERIOR SWEDES IRON TACKS

For Upholsterers' Use, Saddlers' Supply, Card, Clothing, etc., etc.

American and Swedes Iron Shoe Nails.

Zinc and Steel Shoe Nails, Carpet, Brush and Gimp Tacks, Common and Patent Brads, Finishing Nails, Annealed Trunk and Clout Nails, Hob and Hungarian Nails, Copper and Iron Boat Nails, Patent Copper Plated Tacks and Nails,

FINE TWO PENNY & THREE PENNY NAILS,

Channel, Cigar Box and Chair Nails, Leathered Carpet Tacks, Glaziers' Points, etc.

Offices & Factories at Taunton, Mass.

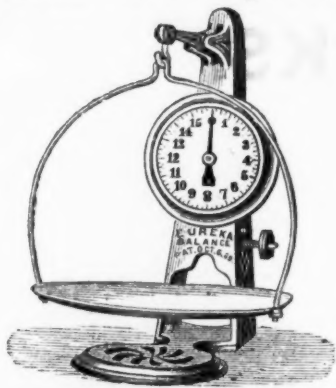
Warehouse at 78 Chambers St., New York,

where may be found a full assortment of Tacks, Brads, &c., for the accommodation of the New York Wholesale and Jobbing Trade.

Any variations from the regular size or shape of the above-named goods made from sample to order.

Hoisting Machinery
MANUFACTURED BY
CRANE BROTHERS MFG. CO.,
Chicago.

Eureka Self-Adjusting



SCALES.

Has a patented attachment for ascertaining the tare of a dish or other receptacle used in weighing without the use of weights or loss of time.

Manufactured only by

JOHN CHATILTON & SONS,
91 & 93 Cliff St., New York

HARKINS & PRAY,
Bristol, Pa., Manufacturers of

The Ball Tugger Iron
AND
TIRE BENDERS.

FINE GRAY IRON CASTINGS of all kinds made to order.

Oldest and Largest Establishment of the kind in the U. S.

F. L. & D. R. CARNELL,

844 Germantown Avenue, Philadelphia
Manufacturers of Pennsylvania Brick Machine, Little Giant Pipe Machine, Fire and Red Brick Presses, Clay Wheels, Tile Machines, Stampers, Grinding Pans. Brick Yards fitted out for running by steam or horse. Heavy and Light Castings. Send for circular.

PRIZE MEDALLISTS:

London, 1862; Oporto, 1865; Dublin, 1865; Paris, 1867; Moscow, 1873; Vienna, 1873, and only Award and Medal for Self-Coiling Steel Shutters at Centennial Exhibition, Philadelphia, 1876.

CLARK & CO.,

ORIGINAL INVENTORS AND SOLE

PATENTEES OF

Noiseless Self-Coiling Revolving
STEEL SHUTTERS,

FIRE AND BURGLAR PROOF.

Also Improved

Rolling Wood Shutters

Of various kinds. Clark's Shutters are the best and cheapest in the world. Are fitted to new frame buildings, Lenox Library, Delaware and Hudson Canal Co.'s Building, Transatlantic Steamship Co.'s new Dock, American News Office, &c., Posey County Court House, Mt. Vernon, Holt County Court, Oregon, Mo. Also to buildings in Boston, Cincinnati, Detroit, Janesville, Wis., Baltimore, Canada, &c. Have been for years in daily use in every principal city throughout Europe, and are endorsed by the Leading Architects of the World.

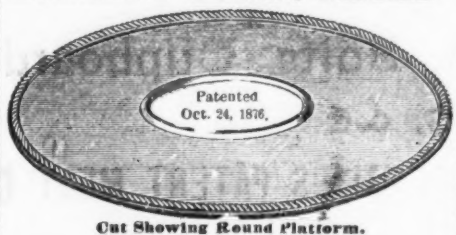
Office and Manufactory,

162 & 164 West 27th Street, N. Y.

ANSONIA CORRUGATED STOVE PLATFORM

Manufactured by the

Ansonia Brass & Copper Co.
Office, 19 & 21 Cliff Street,
NEW YORK.



Out Showing Round Platform.

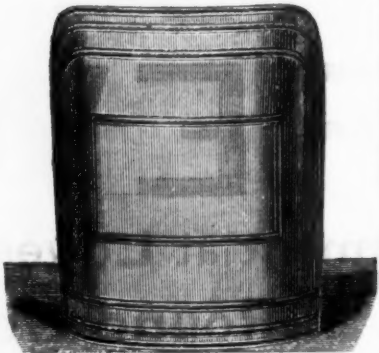
Section Showing Edge.

ANSONIA Bronzed Fire Screen,

With Ornamented Mouldings.

PATENT APPLIED FOR.

The Portable Bronzed Fire Screen or Shield, as shown in the illustration, is especially designed for the safety and protection of walls, furniture, woodwork, paper or varnish from heat. Being constructed of metal, with firm and substantial edges, curved in form to stand alone, it may be easily adjusted to any position about a stove, before a grate or fire place. The demand for something useful, durable and ornamental as a Fire Screen has long been felt, and having finally accomplished the desired result, we are prepared to fill all orders promptly.



To the Hardware Trade.

A General assortment of

HARDWARE

For the country trade constantly on hand.

JOHN L. BROWER & SON, 288 Greenwich Street, New York.

JOWETT'S HORSE RASPS, 14, 15 and 16 IN.

Agents for Mahany's No. 1 Tire Shrinker. D. E. Felter & Co.'s Ice Tools. Send for Circular.

L. BAILEY'S POCKET BLOCK PLANE

We desire to call special attention to our New JOHNSON'S POCKET BLOCK PLANE. We believe this tool when once seen will speak for itself more pointedly than anything we could possibly say. It is simplicity itself, both in construction and operation, and the nicest working tool ever made, and specially recommended for amateurs, pattern makers, light scroll saw work, etc., etc.

No. 12, 4 1/2 in. in length,
1 1/4 in. cutter, japan'd
finish, polished trim-
mings.....\$2.85 \$10.00
No. 12 1/2, 4 3/4 in. in length,
1 1/2 in. cutter, japan'd
finish, nickel-plated
trimmings.....1.00 12.00



See by mail, postage paid, on receipt of price.

Send for Illustrated Catalogue and Price List.

LEONARD BAILEY & CO., Hartford, Conn.

DARLING, BROWN & SHARPE

Providence, Rhode Island,

MANUFACTURERS OF

United States Standard Rules,

AMES' UNIVERSAL SQUARES,

Patent Hardened Cast Steel Try Squares.

THE AMERICAN STANDARD WIRE GAUGE,

Bevel Protractors, Hardened T Squares and Bevels, Center Gauges, Steel

German Silver and Boxwood Triangular Scales, Venier Calipers,

Caliper Squares and Rules, Plumb Bobs,

Paper Drawing Scales, Willis' Odontographs, Steel Straight Edges

and T Square Blades.

MEDALS AWARDED: Paris Exposition, 1867; Vienna Exposition, 1873; Philadelphia, 1876

Illustrated Catalogue sent per mail on application.

INDUSTRIAL ITEMS.

MASSACHUSETTS.

The South Boston Iron Company have just received an order from the British government for a supply of the Butler projectile. This company have sent agents to Europe to take orders for guns and war material generally.

CONNECTICUT.

The largest judgment for the recovery of money that has been rendered by the Superior Court of New London county for several years, was that of William Jessop & Sons vs New London Horse Nail Company. This judgment by Judge Hovey, bearing date of January 16, is for plaintiff to recover \$47,674.87 and costs. It was an action of assumpsit, and the whole transactions in the case involved about \$150,000.

A large brick factory is to be built without delay by the Bradley & Hubbard Manufacturing Company.

The A. E. Taylor Toy Pistol Manufacturing Company, New Britain, are filling an order from Germany, shipping about two tons a week.

The annual meeting of the stockholders of the Hartford Steam Boiler Inspection and Insurance Company, was held Tuesday afternoon, the 12th instant, and the following named gentlemen were re-elected directors of the company, viz.: J. M. Allen, Lucius J. Hendee, Frank W. Cheney, Charles M. Beach, Daniel Phillips, George M. Bartholomew, Richard W. H. Jarvis, Thomas O. Ender, Leveitt Brainard, General Wm. B. Franklin, Newton Case and Nelson Hollister, of Hartford; George Crompton, Worcester; Wm. Adamson, Philadelphia; Thomas Talbot, Lowell; William S. Slater, Providence; Dwight R. Smith, Springfield.

The Winchester Arms Company are contemplating the erection of a large factory on Winchester avenue. It will probably front 300 feet on the avenue, extend 400 feet to Newhall street, and be three stories high.

The Victor Sewing Machine Company, of Middletown, has declared a dividend of 8 per cent.

NEW JERSEY.

It is stated that Gaudier's steel works will be removed at an early day from Jersey City to Conemaugh, Pa., near Johnstown. It is understood that land has been given them, and other inducements offered to lead to this change.

PENNSYLVANIA.

Erie manufacturers seem to be in a prosperous condition generally. The brass works of Jarecki & Co. received last year for articles made \$328,000, and paid for labor \$97,000. The Erie City Iron Works received for sales \$275,507.05, and paid for labor \$61,741.36. The Stevens Manufacturing Company received for sales \$225,000, and paid for labor \$53,000. The Bay State Iron Works received for sales \$145,000, and paid for labor \$37,000.

Half of the employees in the blacksmith shop, machinery and coal and freight car departments of the Philadelphia and Reading car shops, Reading, were suspended on Saturday afternoon for one week; this week the other half will be suspended, thus putting the men in the departments mentioned on half-time. All the men will continue to work full time in the passenger car department.

The plate mill of the Pottstown Iron Company, which has been stopped some four or five weeks for the purpose of putting in new machinery, is about to resume.

The Chester Rolling Mills are running night and day, employing 150 hands.

The employees of the Lebanon Manufacturing Company are at present working 10 hours a day. The company has a contract on hand to build 25 engines.

At a recent meeting of the stockholders of the foundry at Royer's Ford, Montgomery county, which has been idle for two years, a proposition was made by three Reading gentlemen that they would invest \$10,000 in the enterprise, if the owners would invest a similar amount, for the manufacture of hollow ware.

The Allentown Iron Company, which has for some time been prospecting for iron ore in Upper Milford, has met with success, having struck a very valuable vein of what is known as the Bittenbender ore, and that of the very best quality.

At a meeting of the stockholders of the Steele & Worth Co., held at their office at the Viaduct Iron Works, Coatsville, on the 14th inst., the following gentlemen were elected directors for the ensuing year: Hugh E. Steele, J. S. Worth, Wm. P. Worth, Jos. M. Downing and John D. Steele. The board organized by electing the following officers: Hugh E. Steele, president; J. S. Worth, vice-president and general superintendent; and Jos. M. Downing, secretary and treasurer. The president reported that the mill had been in operation about six weeks and had a very fair amount of orders for boiler and boat plates on their books, with good prospects for the spring trade. The company now employ about 50 men, but expect to double this number during the coming month.

The Pennsylvania Iron Works, at Danville, are still lying idle.

A new firm has taken charge of the Milton Car Works, composed of S. W. Murray, R. M. Longmore and Wm. Law, who have formed a limited partnership. They have adopted the firm name of Murray, Dougal & Co., Limited.—Sunbury Gazette.

PITTSBURGH AND VICINITY.

Mr. James H. Murdock, formerly the secretary and treasurer of the Pittsburgh Forge and Iron Co., has become associated with Mr. H. E. Collins in the iron brokerage business, under the firm name of H. E. Collins & Co. Mr. Murdock has been long and extensively connected with the iron trade, especially in connection with the manufacture of a certain class of railway supplies, and Mr. Collins has had a large experience in handling iron and various forms of its manufactured product. They will give special attention to commission sales of iron, nails, steel and their products.

The creditors of Evans, Dalzell & Co. have taken possession of their works, and formed a limited copartnership under the name of

the Crescent Tube Company. The extensive works at Soho, in which many workmen have been employed, will resume operations.

The Rochester Tumbler Co. have their full complement of men now, and are running all their shops without the aid of the union men. They intend starting their new furnace shortly, which will give employment to more hands.

The National Co-operative Association have received a proposition from 60 practical glass blowers of Pittsburgh for the erection of a glass works at Hawk's Nest, the site of the association's other works. The proposition has been accepted, and it is expected that work will be commenced at an early day.

The Coalbrookdale Iron Works are favored with numerous orders, and the works are running to their full capacity on sad irons and thimble-skein wagon boxes.

OHIO.

Our attention has been called to the firm iron structure just erected for the Youngstown Rolling Mill Company, at Youngstown. It will be remembered that the extensive building of wood, covering their rolling machinery, furnaces, &c., was entirely destroyed by fire in June last. A frame building over the furnaces was soon put up; but the company then determined to replace their rolling mill with a building of iron, and plans and bids were tendered by several prominent firms. The plans and specifications furnished by Mr. Alexander E. Brown, C. E., of Cleveland, were approved and a contract made with him for the structure throughout and complete. The finishing work was done and the building turned over to the owners on the last day of December, and was accepted as in every respect satisfactory. Practical mill men pronounce it one of the best, if not the very best, buildings of the kind in the Western country, and give much credit to the young contractor for the excellence of the design and workmanship. As most of the machinery is driven by belts, a very stiff frame is required to carry the lines of shafting and heavy pulleys. The strain upon every post, beam, rod and rafter in the complicated map of framework was carefully calculated and proportioned with a strength of four times the actual strain to be borne by it—in other words, with a factor of safety of four. The building is 140 feet long by 160 feet wide, the roof ridge being about 47 feet above the stone foundations, and consists of a central building 100 feet wide, with a shed on each side 30 feet wide, the whole supported upon 40 iron posts. Those of the main, or central part, are 27 ft. high. These columns are made of a combination of T rails, patented by Mr. Brown, and while they are equal if not superior in strength, are much less costly than those made with the column irons generally used. The entire roof and sides to within eight feet of the ground are covered with heavy corrugated iron, riveted to the frame and thoroughly painted. A ventilator runs the entire length of the roof at the ridge, and light is admitted through two skylights, 8 by 17 feet, in the main roof, and through a row of windows under the eaves of the main or central building and above the roof of the sheds, and also under the eaves of the sheds and at the ends of the building. Not a foot of timber or wood was used in the construction of this building, and its cost will soon be reimbursed to its owners by the saving of all cost of insurance.—Manufacturing and Trade Review.

The Douglas Machine Works, located in Warren, are busily engaged on stationary steam engines, which with steam pumps form their speciality, circular saw mills and castings and machinery of various descriptions.

The Stillwell and Bierce Manufacturing Company, of Dayton, are about shipping two of their Eclipse turbine water wheels, 72 inches diameter, to San Antonio, Texas, for the new water works of that city.

The Straitsville (Ohio) Coal and Iron Company have made an assignment. The assets are about \$55,000. The liabilities are unknown.

Mr. Miles Greenwood, proprietor of the Eagle Iron Foundry, has recently sold his works to a company who design turning them into an extensive canning establishment. Mr. Greenwood will continue his business in another part of the city. His specialty is steam heating apparatus. He has a very large assortment of machine and architectural patterns, which he has been accumulating for a number of years.

Howard Furnace will not be run this year. Olive and Buckhorn furnaces are both chopping wood for a moderate blast.

Spence, Baggs & Co.'s foundry at Martin's Ferry is only running four days in a week. It is stated that the proprietors of the Girard Rolling Mill intend to put it in operation by April 1.

The Strathers Furnace made 507 1/2 tons of iron during the week ending February 14. A Whitwell oven is being built for Milton Furnace, at Wellston.

A massive hopper is being manufactured at Portsmouth for the Norton Iron Works.

Messrs. James Reed & Sons, stove manufacturers, at Warren, are full of orders. They are making a specialty of the new Richmond stove for wood and the legal tender for coal.

The parties who a few weeks since took possession of the Ballinger Glass Works, at Ravenna, have commenced the manufacture of lamp chimneys.

The steel works and rod mill in connection with the Cleveland Rolling Mill Company's Works started up last week.

At Akron the Buckeye Works are running nine and one-half hours per day, and the knife works twelve hours.

There is nothing definitely announced in reference to the starting of the Ohio and Star glass factories at Bellaire, and no movement which points to that end.

The new men at the Goblet works, Bellaire, are said to be improving rapidly, and now make about as many goblets as the old hands did.

It is reported that Mr. John Campbell is about to erect a large stonecoal furnace on his farm east of Ironton, O., to be connected by railroad with Hecla Furnace.

The starting up of the long dormant glass works at Martin's Ferry is at last an assured fact, stock enough having been subscribed to warrant the managers in commencing.

RUSSELL & ERWIN MANUFACTURING COMPANY

Manufacturers of HARDWARE.

FACTORIES, - - - - NEW BRITAIN, CONNECTICUT, U. S. A.

MANUFACTURERS' AGENTS AND DEALERS IN GENERAL HARDWARE AT OUR

WAREHOUSES: NEW YORK, 45 & 47 Chambers Street; PHILADELPHIA, 425 Market Street; BALTIMORE, MD., WM. H. COLE. Agent, 17 South Charles Street.

DOOR LOCKS, KNOBS, Etc.

See our new lines of Rim and Mortise Locks, with our **PATENT ALL STEEL NICKEL-PLATED KEYS**, at **REDUCED PRICES.**

REAL BRONZE BUILDERS' HARDWARE.

Locks, Knobs, Hinges, Bolts, Escutcheons, etc., in different styles of finish.

"Kahala" Bronze Locks, Knobs, Escutcheons, Bolts, Cupboard Catches, Sash Fast, Drawer Pulls, &c.

POLISHED FIRE IRONS, IRON AND BRASS HEAD SHOVELS AND TONGS, HALE'S PATENT MEAT CUTTERS, BAKE PANS.

PADLOCKS.

CABINET LOCKS.

SCREWS.

Complete Assortment at Lowest Market Rates.

Flat Head, Iron.

Round Head, Iron.

Flat Head, Brass.

Round Head, Brass.

Flat Head, Plated.

Round Head, Nickel-Plated.

Flat Head, Japanned.

Flat Head, Bronzed.

All the above goods and many more are contained in Vols. 2 and 4 of our Illustrated Catalogue.

Sole Agents for the

DOUGLASS MFG. CO., JAMES SWAN, Successor,
AUGERS, BITS, CHISELS, DRAWING KNIVES, of the best quality.
Cook's Patent Augers and Bits.

We also offer a full and complete stock of Hardware, as Manufacturers' Agents or at factory prices.

RUSSELL, BURDSALL & WARD, Carriage, Tire, Plow and Stove Bolts.

JUDD & BLAKESLEE, Wrought Brass Butts, Window Spring Bolts, Sash Fast, &c.

UNION MANUFACTURING COMPANY, Cast Iron Butts.

STANLEY WORKS, Wrought Butts, Bolts, &c. O. AMES & SONS, Shovels, Spades and Scoops.

IOWA TOOL CO.'S Hay and Manure Forks. NICHOLSON and DISSTON'S Files and Rasps.

HELLER'S Horse Rasps. M. C. OGDEN'S Best Cast Steel Axes, Hatchets and Hammers.

SPOFFORD'S Braces. GIRARD Wrenches. AUSALE, GLOBE, VULCAN and CLINTON Horse Nails.

UNION, AMERICAN, AND CENTENNIAL SPRING HINGES, Single and Double Acting. TORREY'S, GEM, STAR AND CHALLENGE DOOR SPRINGS.

And a full and Complete Assortment of all kinds of HARDWARE.

Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of **PEN AND POCKET CUTLERY**,
Solid Steel Scissors, Shears, Razors,
Russia Leather Strops, Hones, &c.
Sole proprietors of the renowned full concave patent
"ELECTRIC RAZORS,"
And the celebrated "ELECTRIC SHEARS." Nickel Plated
Hones.
Agents for the **BENGALL RAZORS**.
AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.
91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

MERIDEN CUTLERY CO.

The Oldest Manufacturers of Table Cutlery in America.

THE "PATENT IVORY" HANDLE TABLE KNIFE.

CELLULOID

Or "PATENT IVORY" KNIFE. The handsomest and most durable substitute for Ivory known. Also makers of all kinds of TABLE, BUTCHER AND HUNTING KNIVES. Illustrated catalogues with prices sent to the trade on application. 49 Chambers St., New York.

THE
LAMSON & GOODNOW
88 CHAMBERS ST.
MFG. CO.
N.Y.
AMERICAN TABLE
CUTLERY &c.

H. WILKINSON'S
Superior Solid Cast Steel Blades
SHEARS and SCISSORS.

H. WILKINSON,
Manufacturer of Original "Wilkinson" Goods,
Collinsville, Connecticut.

NAUGATUCK CUTLERY CO.,
Manufacturers of FINE PEN & POCKET CUTLERY.
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HALL, ELTON & CO.,

Electro Plated Ware, German Silver and Britannia Spoons.



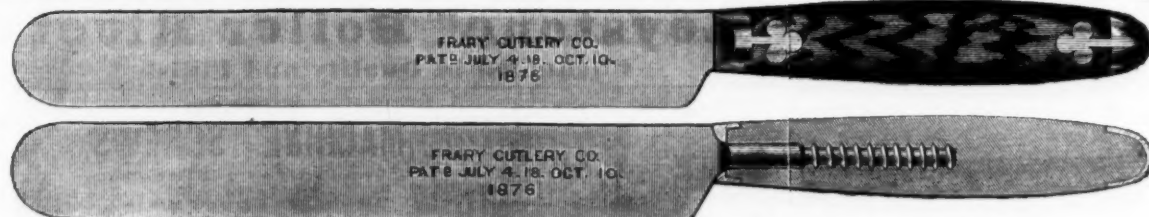
Factories, Wallingford, Conn.

Salesroom, 75 Chambers Street, New York.

THE FRARY CUTLERY COMPANY,

FACTORY, Bridgeport, Conn. NEW YORK OFFICE & WAREHOUSE, No. 82 Chambers St.

Manufacturers of all kinds of Table Cutlery.



The above illustrations represent their New Patent Screw Tang Lock Fast Solid Handle Knife.

There is no question but that a solid handle Knife is much more preferable than a scale tang. The great objection to their use hitherto is, that no solid wood handle has been placed on the market with the handle properly secured—no handle put on with cement will stand the wear and tear of every day usage. The cement will expand and contract with the action of heat and cold, and become loose, crack and come off, causing great prejudice against their use. This objection is overcome in our patent screw tang. A wood screw is welded to the tang of the Knife or Fork, and screwed firmly and securely in the handle and locked there by the bolster, making a very strong neat and handsome knife, which we warrant never to get loose, crack or come off. We manufacture a large variety of patterns, both Table, Butchers and Carvers, and furnish the patent handle nearly as low as the scale tang. We are prepared to furnish this line of goods, together with the scale tang and iron handle, very promptly, and very respectfully invite the attention of the trade.

TUCKER & DORSEY, Young's Patent Folding Scissors.
MANUFACTURERS.



These Scissors are made of the very best steel, nickel plated, and so constructed that they can be readily folded and carried in the pocket without injury to the persons. A sample pair will be sent by mail, to the trade only, upon receipt of the retail price, namely: \$1.00 For small size, either blunt or pointed. \$1.50 Large size, pointed or half pointed. New York, Feb. 1st, 1878.
MAX BROS., Proprietors,
430 Broadway.

ALFRED H. HILDICK,
12 Warren St., N. Y., Importer of
Birmingham Heavy Hardware, Chains,
Anvils, Vises, &c.
Agency of HILL BROS. & CO., WALSALL, ENGLAND,
GENERAL HARDWARE MERCHANTS,
And of

Ball's Pat. Solid Steel Sheep Shears.



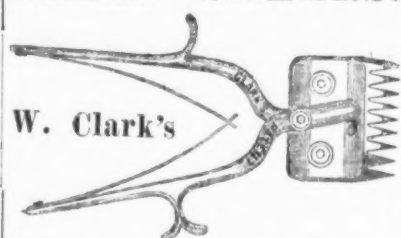
These Shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use, either in the bow or at the junction of back and blade. Samples can be seen at above address, or sample lots furnished. Depot for "THE CROWN" SOLID BOX VISES. A cheap and useful tool.

Cutlery.

CORPORATE MARK,
Joseph Rodgers & Sons' (LIMITED)
CELEBRATED CUTLERY,
No. 82 Chambers Street, New York.
F. & W. CLATWORTHY, Agents.

The demand for Joseph Rodgers & Sons' productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.
To distinguish Articles of Joseph Rodgers & Sons' Manufacture, please to see that they bear their Corporate Mark.

SHEEP SHEARS.



Simple in action. Fleece evenly shorn without injuring the skin. Is held firmly in right hand and easily operated. Also
CLARK'S HORSE CLIPPERS.
No. 1, for two hands; No. 2, one hand, for heads and manes; No. 3, one hand, for legs and coarse hair; No. 4, for two hands, with improved spring. Send for price list.

McCOY & CO.,
SOLE AGENTS,
134 and 136 Duane Street, New York.

RUSSELLS

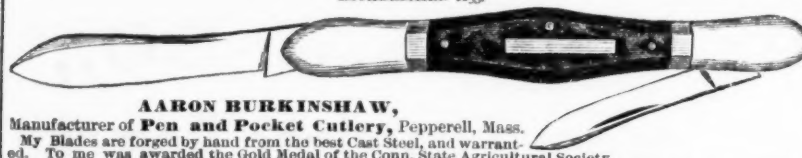


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TOOLS.**

PATENT

HAGSTOZ & THORPE,
Sole Manufacturers and Proprietors,
Sixth and Chestnut Sts., Philadelphia, Pa.

ESTABLISHED 1853.



AARON BURKINSHAW,
Manufacturer of Pen and Pocket Cutlery, Pepperell, Mass.
My Blades are forged by hand from the best Cast Steel, and warrant
ed. To me was awarded the Gold Medal of the Conn. State Agricultural Society.

ESTABLISHED 1832.

NEW YORK KNIFE CO.

MANUFACTURERS OF SUPERIOR

Table & Pocket Cutlery,

WARRANTED TO BE MADE OF THE BEST MATERIAL.

WALKILL RIVER WORKS,
Walden, Orange Co., New York.
THOS. J. BRADLEY, President.



If you want the best at reasonable prices, send for illustrated circular and price list of the celebrated

Covert Harness Snap, Horse and Cattle Ties, Breast Chains, Halter Chains, Post Chains, Rein Chains, &c.
These goods are sold by all leading jobbers in General and Saddlery Hardware at manufacturers' prices. Sample snap sent free of charge if desired.
Address **COVERT MFG. CO.,**
Sole Manufacturers, Troy, N. Y.

FISHER'S MOWING MACHINE KNIFE GRINDER,

**BICKLE EDGE MOWING KNIVES, MOWING SEC-
TIONS, &c., &c.**
Sold by Hardware and Implement Dealers everywhere. Illustrated Circular and Quotations sent free.
HENRY FISHER, Canton, Ohio.

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AGENT FOR
George Wostenholm & Son,
"Limited."
Washington Works, SHEFFIELD,
Celebrated I-XL Cutlery, Razors, &c

AGENT FOR
WALTER SPENCER & CO.,
Steel and File Manufacturers,
Rotherham, ENGLAND.

Corporate Mark.

W. SPENCER
ROTHERHAM

Granted 1777.



meeting is called for the 28th inst. to elect directors and put things in working order. The works will be known hereafter as the Buckeye Glass Company.

The Cleveland Hardware Company have recently received an order from Dublin, Ireland, for 10 of their improved shearing machines, this being the fourth order from the same dealer. The works of the above-named company are running full with large orders ahead.

At last the Etna Iron Works is compelled to ask the indulgence of its creditors. It has made a manly fight against the most adverse circumstances, hoping every day for better signs in the iron market. For three years the struggle has kept up, the managers devoting all their energy and interposing every personal interest to tide the immense concern over the depression. But there came a time when the sales were not proportioned to the large production of the furnace, and, consequently, not equal to the demands of a debt which had fastened upon the enterprise when the panic struck the country soon after the Etna works began building. This concern is one of the largest iron enterprises in the Ohio Valley. It has three furnaces, one of them probably the finest in America. It has over 20,000 acres of mineral land. All the natural advantages for the production of cheap metal it possesses. The simple fact that it was midway in its great improvement when the financial collapse occurred in 1873, is the bottom of its misfortune, for then the stockholders could not meet their assessments, and the era of debt began. This mounted up to huge proportions, but all the time the profits were sufficient to pay the interest until now, when large sales at market prices have become impossible. The works has addressed a circular to its creditors, stating the situation, and promising a full statement of its affairs in about ten days. Until then, we can give no figures, but we are quite sure that the exhibit will be of a character to convince all that the interests of everyone will be best subserved by patience and forbearance.—Iron Age Register.

KENTUCKY.

The Norton Iron Works' Nail Factory, at Ashland, went to work on Thursday, the 7th inst., under the new arrangement entered into by the Western manufacturers. They ran all of last week. All other departments of the works are idle.

During her late blast the Mt. Savage Furnace made 254 tons of cold-blast and 1629 tons of hot-blast iron, the former on an average of 220 bushels of charcoal to the ton of iron made, the latter on 160 bushels. The manufacture of cold-blast did not prove satisfactory and was therefore discontinued. The Princess is now making 18 tons of No. 1 iron in 24 hours, and increasing in quantity daily.

WISCONSIN.

A little more than a year ago the Milwaukee Iron Company went into bankruptcy. The property of the company was mortgaged to the extent of \$400,000, and the holders of this indebtedness at once began foreclosure proceedings. Two weeks ago the mills were sold at auction, and were bid in by the bondholders, bringing \$360,000. The property consists of one rail mill, one merchant mill, two puddle mills, two blast furnaces, machine shops, blacksmith shops, &c., &c., and thirty acres of land. It was valued four years ago at \$2,300,000. The sale of it of course sacrifices the stock, and the creditors will get little or nothing. For six months past the mills have been operated by Mr. Hagerman, president of the old company under a lease, but it is now thought that they will be shut down indefinitely. The mills formerly gave employment to about 1000 hands.

GEORGIA.

Bartow Furnace turned out in 1877, 7316 tons of pig. The grade was mostly gray forge.

TENNESSEE.

Victoria coal mines, the property of the Southern States Coal, Iron and Land Company, are located on the Jasper branch of the Nashville and Chattanooga Railway, 14 miles from South Pittsburgh. They are 43 miles by rail from Chattanooga and 23 miles on a direct line from that city. The vein thus far has been worked in the speers, and is a good deal disturbed, ranging from 18 inches to six feet in thickness. Thorough prospecting shows that when the vein proper is reached it will average four feet in thickness. The company own 45 square miles of the mountain which overlies this thickness of coal, the thickness running very regular. The coal is a pretty strong and hard bituminous, entirely free from slate, a slow burner, but produces a long flame; ash, reddish brown. The vein is the same as that worked at Sewanee, and the general character of the coals is identical. The output per day now is from 75 to 100 tons. The product sells readily in Chattanooga and is well liked by the manufacturers of that city. The company are burning a good deal of coke on the ground in pits. Thirty coke ovens are nearly finished; 100 are projected. Apparatus for washing and crushing are being built. When all their appliances are in hand the company are persuaded they can make as good coke as any in the country. The coal is popular for domestic use.

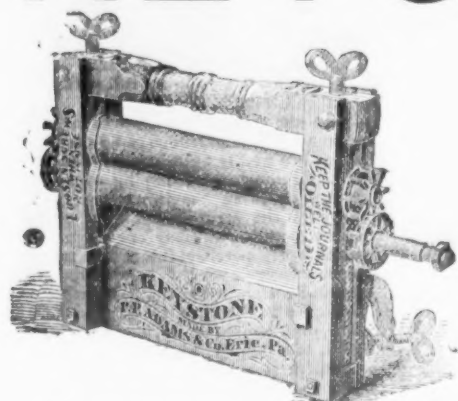
ALABAMA.

Mr. Eugene Gordon, brother of the Georgia senator, is prospecting a vein of coal near Boyd's switch, Jackson county, Alabama, on the Memphis and Charleston Railway, 60 miles from Chattanooga. The vein is the same as that now worked at Battle Creek, Marion county, Tennessee, but is thicker, being from 3 to 4 feet. The coal is an excellent gas coal—clean, hard, and bright; makes excellent coke, and is a "fancy" domestic coal, being a very lively burner. The mine can be reached very easily and inexpensively, and must, when it shall fall into the hands of practical men who have the needful capital, prove a very profitable property.

Russia imports to the value of \$380,000, 000, receiving 40 per cent. from Germany and 32 per cent. from Great Britain. She exports to the value of \$260,000,000—20 per cent. to Germany and 50 per cent. to Great Britain.

KEYSTONE WRINGERS,

For Home and Export Trade.



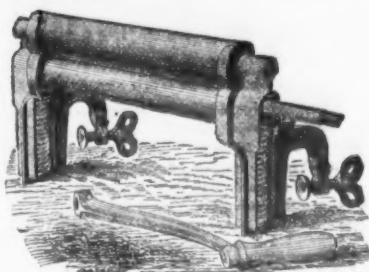
No. 10, Family Size, with Cog Wheels.

WOOD FRAME COG WHEEL WRINGERS.

No.	Size of Rolls.	Price per Doz.
10	10 x 1 1/4	\$60 00
12	10 x 1 1/2	63 00
16	11 x 1 1/4	68 00
18	11 x 1 1/2	71 00

In calling the attention of dealers to the **Keystone Wringers** we wish to particularly impress them with the fact that we make them in all the leading styles, viz: Wood Frame Cog-Wheel Wringers, Wood Frame Friction Wringers, and Iron Frame Self-Adjusting Wringers, so that if you have a trade that calls for more than one style or all the popular styles you can get them all from one house if you buy from us.

We warrant our Wringers to be equal in durability and efficiency to any in the market: they are the LATEST IMPROVEMENTS.



No. 2, Family Size.

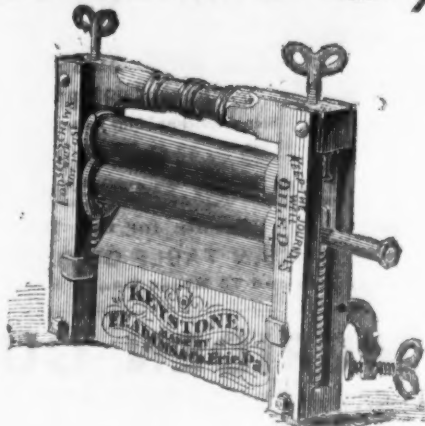
SELF-ADJUSTING IRON FRAME FRICTION WRINGERS.

No.	Size of Rolls.	Price per Doz.
00	10 x 1 1/8	\$51 00
2	10 x 1 1/4	54 00
4	11 x 1 1/4	61 00

They are made from the very best materials, and are as finely finished as any Wringers made.

We use a Patent All-white Rubber Roll, that we do not hesitate to warrant to be the **Best Roll** there is in use.

Aside from the general construction and finish of our Wringers, there are some special features to which we wish to call attention. The Springs that we use are made from the finest Bessemer Spring Steel, and tinned; they are very long and heavy, giving them great elasticity and durability.



No. 1, Family Size.

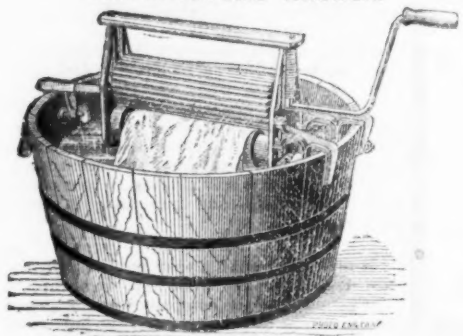
WOOD FRAME FRICTION WRINGERS.

No.	Size of Rolls.	Price per Doz.
1	10 x 1 1/4	\$54 00
3	11 x 1 1/4	61 00

The Keystone Wringers have more Capacity than any other Wringer.

The **CLAMPS** on the Keystone Wringer are complete of themselves and are swiveled to the frame so that they will adapt themselves to any shaped tub without any strain on the frame or tub.

THE KEYSTONE WASHER.



We Warrant them to give entire Satisfaction.

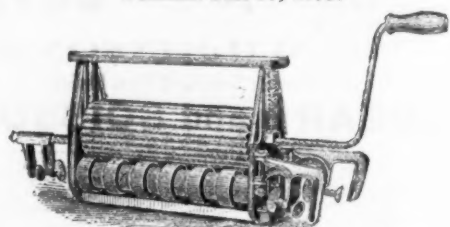
We also manufacture a large line of Step Ladders, Extension Ladders, Clothes Horses, Hat and Coat Racks, and the **Best Spring Bed** in the Market.

Send for Descriptive Price List.

F. F. ADAMS & CO., Erie, Pa.

THE KEYSTONE WASHER.

Patented Feb. 27, 1875.



Price, \$36 per Dozen.

Send for full Descriptive Circular.

CLARK BROTHERS & CO.,

SOLE MANUFACTURERS OF

Clark's Patent Concave Carriage Bolt.

Best Bolt manufactured for all kinds of Agricultural Machinery. Will not split the wood, and cannot turn in its place.

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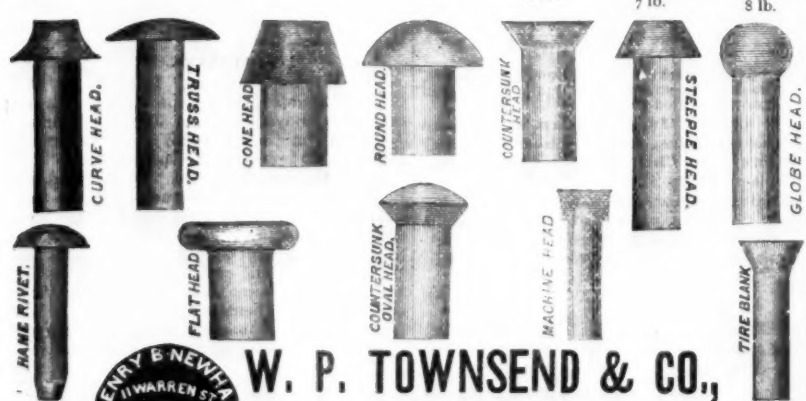
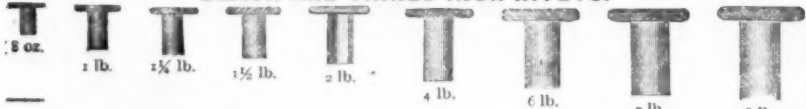
MILDALE, CONN.

HOLROYD & CO.,

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BLACK AND TINNED IRON RIVETS.



W. P. TOWNSEND & CO.,
PITTSBURGH, PA.,

Manufacturers of every description of First Quality.

RIVETS.



Philadelphia "STAR" Bolt Works.

NORWAY IRON

FANCY HEAD BOLTS,

Carriage & Tire Bolts. Star Axle Clips, &c.

TOWNSEND, WILSON & HUBBARD, 2301 Cherry St., Philadelphia, Pa.

HOOPES & TOWNSEND,

PHILADELPHIA, PA.,

MANUFACTURE

Machine & Car Bolts,

COLD PUNCHED

Square and Hexagon

Nuts, Washers,

"Keystone" Boiler Rivets, Unequaled in Quality and Finish.



TURNED MACHINE SCREWS.

One-sixteenth to five-eighths diameter. Heads and points to sample.

IRON, STEEL and BRASS.

Lyon & Fellows Mfg. Co.,

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FORT PLAIN SPRING AND AXLE WORKS.



FOR FALL TRADE.

All dealers in SPRINGS AND AXLES will find it to their interest to send to us for Price List and Discounts.

WOOD, SMITH & CO., Fort Plain, N. Y.

THE AETNA SPRING AND AXLE CO.,

John St., Bridgeport Conn., Manufacturers of

THE VERY BEST SPRINGS AND AXLES.

Our Standard Springs, weighing about half as much as the Springs of other makers, to do the same work cost but little more per vehicle than a common Spring. Our Jamb-screw, Colling Collar, Parallel Arm, Malleable Iron Box Axles are the best in the world. Exclusive makers of LEWIS' TORSION AND CROSS SPRINGS. Supercedes the Brewster Cross and End, dispenses with side spars, weigh less, hangbody equally low, ride easier and cost less. Shop newly stocked with new and improved Machinery. Send for Price List. W. H. WILSON. Print. and Trans. O. P. LEWIS (formerly of Spring Perch Co.), Secy. and Supt.

H. D. SMITH & CO.,

Plantville, Conn.,

Manufacturers of the

BEST QUALITY CARRIAGE MAKERS' HARDWARE.

Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.

McCAFFREY & BRO.,

Pennsylvania File Works, Philadelphia.

Awarded for



Silver Medal.



Trade Mark.



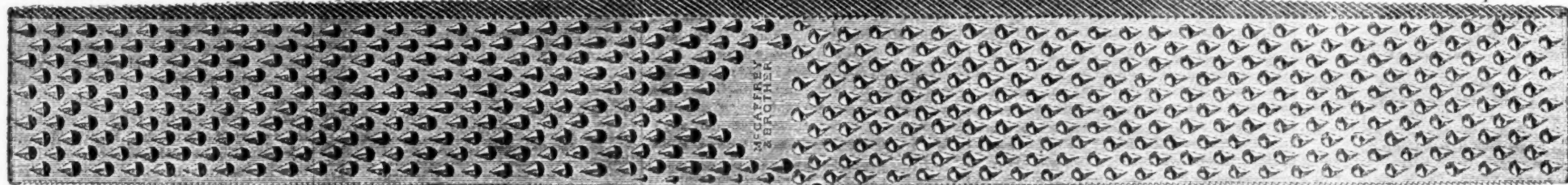
Highest Premium.



Superior Goods.

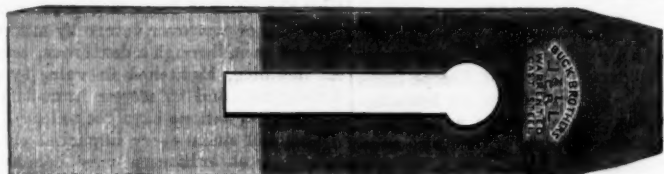


Being practical mechanics, engaged exclusively in making **FILES AND RASPS** of all descriptions, and having specialties in our line, we are desirous of receiving a share of public patronage. When tested with other brands at present in the market, our Files and Rasps have never failed to do more work. Foreign orders receive prompt attention.



Double Horse Rasp.

N. S. ARNOLD & CO., 310 California Street, San Francisco, Sole Agents for the Pacific Coast.



BUCK BROS, Millbury, Mass.

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New York, Thursday, February 21, 1878.

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In forming his tariff bill Mr. Wood avowed his purpose to be to admit raw materials free. He now says in explanation of his work that it is difficult to tell what are raw materials. We sympathize with him; but there are some things that are unmistakably raw materials, and in most cases these have had the duties increased. Raw silk, for example, is certainly a raw material. India rubber, horse hair, rags, ivory, tin, are all raw materials without any question, and do not come in competition, except in the case of rags, with any of the products of the country. Two of these items, rags and silk, are the basis of immense industries, and yet the duties on these are increased, while those on the products into which they enter are decreased. As it stands, Mr. Wood's bill might best be described as an effort to discourage American industry as far as possible, and produce conditions most favorable to a large importation of foreign manufactures.

Commercial Travelers.

Several newspapers claiming to be commercial journals have lately been indulging in very foolish talk about commercial travelers, and the action of a certain Western jobber in withdrawing his travelers from the road is heralded as a step in the direction of reform. An example of this is found in an extract from the *Chicago Journal of Commerce*, which we copied last week as a news item, and which has called out a very proper and well-merited protest which we print in another column. If we had not supposed it would have been so understood by our readers, we should have said, by way of comment on the item in question, that when a house withdraws its travelers it is pretty good evidence that it has no further use for them, and when it reaches a position in which it no longer needs to seek trade it may safely be inferred that it would not find trade if it should seek it. To proclaim such action as a step toward reform in the prevailing method of doing business, is absurd. This is evident to any one acquainted with the facts of the case, and none know it better than those who, in withdrawing their travelers, make a virtue of necessity.

It is too late to begin a defense of the system of selling goods by sample, which has become an integral part of the commercial system of every nation engaged to any extent in manufacturing and distributive industries. If it had not been a necessity here as elsewhere, it would never have attained its present extent and importance; if it were not indispensable necessary at the present time, it would not last a week. The agreement entered into between the traveler and the individual or firm he represents, is one of mutual advantage. The traveler has experience, skill as a salesman, personal acquaintance, a knowledge of the trade and requirements of a particular district, or some special qualification which enables him to sell goods to advantage; the merchant whom he represents has goods to sell to a trade he cannot reach in any other way than by seeking it in person or through an agent whom he can invest with some measure of discretionary power. That he cannot seek it in person without neglecting the more important duties involved in the general management of his business, is obvious; consequently, he finds the traveler a necessity and employs him. It is, of course, possible to imagine a commercial system in which there would exist no necessity for travelers, but such a system could not now be organized, and probably it never will. To the buyer the services of the traveling salesman are as important as to the seller. The merchant doing business at greater or less distances from the great manufacturing and distributing centers, is greatly benefited by the competition to secure his orders. Instead of going to the market the market comes to him, and he can make his selections and purchases over his own counter, without loss of time and uninfluenced by any considerations except those of price, quality and his business requirements. He may be annoyed at times by persistent efforts to induce him to buy what he does not need, and if he buys injudiciously he may sometimes blame the system of selling by sample when his own judgment is really at fault; but notwithstanding all this, the traveling salesman is as necessary to him as to the merchant sending him out, and through the traveler transactions are effected more easily, more cheaply and more satisfactorily than would be possible in any other way. The denunciation of travelers as a burden to trade and a tax upon merchandise, is only an echo of the old and unreasonable complaint against "middle-men." It ought to be evident to any man of average intelligence that no one can make a living by rendering services and effecting exchanges unless some one is willing to pay for those services; and no one pays for services which are unnecessary or which do not result in economy and convenience. The moment a middleman, be he broker, agent, commission merchant or traveler, ceases to be a necessity to those for whom he transacts business and between whom he effects exchanges, that moment he drops out of the commercial system and must either stand idle or discover some way of making himself useful. To suppose for a moment that merchants send out travelers for any other reason than because it is desirable and necessary to do so, is to admit an ignorance of practical business matters of which an intelligent school boy should be ashamed.

Of commercial travelers, as a class, we can only speak in general terms. As the rule they are enterprising and able business men. None others are fitted for this service, and none others can retain a place in it. The qualifications of a successful traveler are peculiar. He must be quick of perception, prompt in decision, energetic, of tireless industry and accurate in his judgment of men. When on the road he should, and commonly does, make business his first and only thought. His hours of rest and leisure are few and far between, and his life is one of continual drudgery of a kind which wears men out and forces them to a life more like that of the Wandering Jew of romance than of men with local habitations and names, home attachments and social connections. To make such sacrifices a man must have the commercial faculty largely developed, and to this we may attribute the fact that travelers are the life of trade wherever trade exists.

If merchants, speaking generally, have any cause of complaint against the system of selling by sample, it might not be unprofitable for them to inquire whether the trouble is not one which they can themselves remedy. The service is one which calls for the best men who can be found to engage in it. The most successful commercial travelers are gentlemen of liberal education and high personal character, and such men do not long remain in an employment which entails sacrifices that are not appreciated, and involves an expenditure of physical energy and mental labor inadequately compensated. The general reduction of travelers' salaries during the past few years, the growing disposition among merchants to restrict expense accounts within the bare limits of actual necessary expenditure with close economy, the dissatisfaction expressed when men do not accomplish the miracle of selling where no one whose orders are desirable will buy, the often unreasonable complaints when bad accounts are made in cases where no amount of foresight would have averted loss—all these incidents in the life of the traveler, growing out of "hard times" and the necessity for economy in business expenditures, have had their natural and legitimate effect. If the relations between merchants and travelers have become less satisfactory now from these causes than formerly; if good men are becoming discouraged and disgusted, and cheaper men of inferior qualifications are taking their places; if buyers are learning to distrust "drummers," and to regard with suspicion the representations of new men sent out with instructions to sell goods now and let the future take care of itself; if "drummers" as a class are losing in any degree the respect of the community, is it not because of a mistaken economy on the part of our merchants in not making this service one in which the best class of salesmen in business will be glad to engage? The commercial traveler one meets in Great Britain and all over the Continent representing British houses, are as the rule gentlemen above the average in intelligence, culture, refinement and business ability. The same is true to a great extent in this country; but there are more exceptions here than abroad, and in the number of these exceptions we find an explanation of much that is unsatisfactory in the system of selling by sample. A man who is not in every way conspicuously fitted for the road should not be kept there to represent any responsible house; one who is fitted, who merits confidence and succeeds when and where success is possible, should be liberally treated in the matter of salary and expenses. It is usually a poor economy to squeeze a man down to the last cent he will take for his services, and always an injustice to expect that a traveler will make every trip equally successful. His work is arduous, difficult and thankless at best, and every consideration of justice demands that he should be treated with liberality. Those who do not merit such treatment should be retired.

The Proposed Tariff.

Messrs. Howard Potter, J. M. Constable, Mantion Marble, Perry Belmont, C. H. Marshall, R. B. Minturn, Gustav Schwab, J. C. Robbins, and Mahlon Sands have prepared a memorial to the Ways and Means Committee discussing the new tariff bill. Of schedule E, relating to metals, these gentlemen say:

Line 242.—Scrap iron—duty, \$1 a ton—is probably a mistake.
Line 251.—Steel railway bars at 1 cent per pound is equal to 63 per cent, and therefore excessive.
Lines 252 to 256.—This classification embraces all hand, hoop and bar iron; all manufactures of hardware, cutlery, machinery, iron and steel wire, and a very large number of articles made of iron and steel. The proposition to make one rate on this class of goods may be open to the objection that many articles comprised in this classification cannot bear 35 per cent. and bring revenue, nor is it fair that the raw materials, bar iron and bar steel, should be rated as high as the manufactured product.

Line 267.—Tin plates at 1 cent per pound duty is equal to 15 per cent.—a much too high rate for this indispensable raw material.
Copper in pigs and bars at the reduced rate of 2 cents and 3 cents respectively, according to the purity of copper, is undeniably an improvement on the present duty. But as we only get a revenue of \$1.35 per ton from all kinds of ingot, bar copper, including copper ore, and old copper, there can be no doubt that this copper ought to be free, especially as our native copper is largely exported to Europe.

The treatment of the rest of the articles in this schedule is, as a whole, an improvement on the existing tariff.
The calm confidence with which these gentlemen deliver their opinions is refreshing, especially their conclusion that the proposed duty of \$1 per ton on scrap "is probably a mistake." We quite agree with them. On this point a good story is telegraphed from Washington, which shows how much importance Mr. Wood attaches to this particular "mistake" of the many he has made. Judge Kelley was speaking against the proposed tariff on iron, and had reached item scrap, which is reduced from \$8 to \$1 per ton. Wood said he thought it was not necessary to waste time on so small a matter, and he wanted to get on with his bill. Judge Kelley replied that the importance of the subject was one for the individual member to decide for himself, and he begged to assure Mr. Wood that the tariff on scrap iron was not a small matter to the capital and labor invested in iron. He further wished it understood that he was the peer of any member of that committee, and while they might decline to hear outsiders they would have to hear him until he had finished. We are happy to say that he did continue, and that if Mr. Wood still thinks the proposed reduction of the duty on scrap to \$1 a matter of small moment, it will not be because Judge Kelley has not told him the facts of the case. Another little story comes still later by

wire, which shows something of the manner in which the sub-committee went to work:

When the sub-committee began preparation of the bill, they had before them the tabular statement of J. S. Moore, of the Statistical Bureau at the New York Custom House. After the bill was reported to the committee it was discovered that there were palpable discrepancies in the equivalent valorem of duties paid on imported merchandise during the last fiscal year between the report of the Bureau of Statistics and Mr. Moore's statements; and, therefore, the committee requested the Secretary of the Treasury to furnish them with a statement of actual rates of equivalent valorem, with a statement of articles to which such rates apply. Secretary Sherman has written a letter to the committee in which he says that the Director of the Bureau of Statistics is understood to state that the discrepancies which exist between the two sets of tables arise in part from the fact that the values therein given were obtained from different sources, the Bureau taking for its basis the home consumption statement, which aggregates the quantities and values of articles entered for consumption at all the ports; while Mr. Moore's calculations were based upon the returns from the port of New York alone, frequently upon a wider range and better class of goods. The committee prefer the statement of the Bureau, and Mr. Wood says the rates of the bill would in many instances have been different if they had received the Bureau statement at an earlier date.

Altogether, Mr. Wood's tariff bill is a Comedy of Errors, and its reception by the House will probably discourage future attempts to revise our tariff system at one sitting.

Our Trade with France.

The approaching Paris exhibition lends special interest to statistics relating to our trade with France. The following table shows our import from and export to that country during 13 fiscal years, in millions of dollars:

	Import.	Domestic.	Foreign.	Total.
1864	11.48	16.78	7.1	25.97
1865	8.52	15.01	1.04	24.57
1866	24.28	61.18	.66	86.12
1867	31.21	44.09	1.81	77.11
1868	36.92	45.95	.99	74.86
1869	35.64	44.45	1.42	79.51
1870	48.09	53.34	1.50	102.93
1871	28.10	37.12	.57	55.49
1872	43.15	31.75	.54	75.45
1873	33.98	33.04	.58	68.50
1874	31.77	48.73	.74	101.24
1875	63.34	50.13	.62	114.09
1876	51.51	45.99	.88	98.38
Grand total	458.00	516.15	12.76	986.91
Average	35.23	39.70	.98	75.91

The foregoing shows that our import from France, which during the last year of our war had fallen to \$8,520,000, gradually rose to more than seven times as much in 1875, and has during the 13 years averaged \$35,230,000. Our export of domestic produce to France has not increased in the same proportion, but has nevertheless been about three times as much during the last few years as it was then. The entire trade, it will be seen, has averaged \$75,910,000, and goes to prove the importance of our commercial intercourse with that country.

The following have been some of our principal exports of domestic productions to France during the fiscal year ended June 30, 1876:

Agricultural implements	\$185,843
Adrian corn	147,277
Oil	52,447
Wheat	682,477
Copper	1,766,146
Cotton	24,035,344
Drugs	34,625
Hides	669,782
Iron and manufactures	53,316
Rosin and turpentine	21,139
Tar and pitch	8,000
Crude petroleum	1,669,061
Benzine	446,508
Refined petroleum	127,328
Lubricating oil	3,600
Timber	412,114
Beef	43,254
Pork	23,391
Lard	1,346,504
Bacon	43,678
Seal machines	57,239
Tallow	951,763
Tobacco, leaf	2,640,530
Tobacco, manufactured	88,662
Drugs	123,607
Lumber	53,732
Staves	358,593
Hoops and poles	19,178
Furniture	13,347
Woodenware	20,319
Total	\$36,091,120

The foregoing shows that copper, cotton, petroleum, lard and tobacco are the principal articles exported from the United States to France. While the rest of Europe takes large quantities of our leather, its introduction into France has yet to be undertaken. France draws raw produce from this country almost exclusively, as our table shows; under less onerous duties we feel convinced the French would take American manufactures in large quantities, especially hardware and manufactures of wood of all kinds. The following shows the general trade movement in France in millions of dollars:

	Raw	Manu-	Other	Total.
	Food.	factu's.	goods.	
1877	192	437	90	719
1878	195	474	93	762
1879	140	431	89	660
1874	176	416	76	668
1875	188	422	69	679
1876	159	423	97	679
1871	229	375	62	666
1870	152	338	44	534
1869	130	308	31	469
Total	1,579	3,718	673	6,299
Average	174	413	75	668

	Manu-	Raw	Other	Grand
	factu's.	produce.	goods.	Total.
1877	369	292	38	1,449
1878	379	298	37	1,515
1879	428	306	42	1,476
1874	410	300	41	1,440
1875	429	300	40	1,471
1876	415	298	39	1,452
1871	329	278	26	1,286
1870	307	230	24	1,136
1869	351	237	27	1,245
Total	3,427	2,447	316	12,489
Average	381	279	35	1,386

From what precedes it will be perceived that while France during the nine years imported of raw produce \$3,718,000,000, she exported but \$2,447,000,000, and that on the other hand she imported of manufactures but \$673,000,000, and exported \$3,427,000,000. In other words, France exports nearly as much in the shape of manufactures as she

imports of raw material, and her export of manufactures is about five times as large as her import of the same. This shows at a glance the profitability of French manufacturing industry and of her entire machinery of trade. Not only has she pretty much the monopoly of her home trade in manufactures, but she exports very extensively at the same time. By superior workmanship and taste her manufacturers export to all quarters of the globe, and she takes in return from abroad but comparatively few manufactures.

Of coal, iron, steel, metals and their manufactures, France imported during the past three years the following, in millions of dollars:

	1877.	1876.	1875.
Coal	23.20	24.61	36.64
Ores of all sorts	10.00	7.25	7.30
Pig iron	1.97	1.36	1.33
Wrought and cast iron	2.59	2.08	1.99
Steel	.74	.74	.93
Copper	8.84	12.15	6.83
Lead	5.30	4.88	4.35
Tin	1.86	2.27	2.44
Spelter	3.31	3.30	3.28
Machinery	7.52	7.24	6.45
Iron vessels	1.31	1.27	1.07
Tools	1.05	.97	.97
Needles	.50	.57	.56
Metallic pens	.07	.07	.07
Cutlery	.09	.09	.08
Other metal goods	1.58	1.48	1.65
Total	80.13	79.97	75.65

The following was the export of the same articles:

	1877.	1876.	1875.
Machinery	4.08	4.55	5.00
Cutlery	.53	.36	.36
Arms	.88	1.09	2.47
Tools &c.	12.10	14.40	16.12
Ores of all sorts	1.67	.70	.90
Copper and manufactures	.63	.95	1.46
Coal	2.32	2.13	2.13
Total	22.43	24.50	28.86

The foregoing shows that France imports a great deal more machinery than she exports; the same is the case with Copper. Of tools, on the other hand, she imports few and exports comparatively a large amount. While France's import of coal, metals and manufactures increases, the general export thereof is evidently rapidly on the decline.

The maritime movement in France has been the following. The first column shows the number of vessels; the second, cargoes in thousands of tons:

ARRIVALS WITH CARGO.				
	1877.		1876.	1875.
French.....	9,698	2,835	9,861	2,709
Foreign.....	20,660	5,736	21,014	5,810
Total.....	30,358	8,571	31,475	8,519
			29,970	7,790
DEPARTURES WITH CARGO.				
	1877.		1876.	1875.
French.....	7,860	2,506	8,309	2,362
Foreign.....	14,008	3,325	14,338	3,252
Total.....	21,868	5,831	22,647	5,614
			24,069	5,680
RECAPITULATION.—1877-1875.—TOWNSHIP.				
	Arrivals.		Departures.	
French.....	8,069		7,206	
Foreign.....	16,791		9,919	
Total.....	24,860		17,125	

The aggregate entries and sailings with cargo, therefore, showed 15,295,000 tons under French flag and 26,710,000 tons under foreign flags. In the entire inward and outward movement the French tonnage was consequently about 36 per cent., the remaining 64 per cent. going under foreign flags.

It will be observed that the tonnage of vessels with cargo entered was 45 per cent. larger than the sailings with cargo. This is sufficiently explained by preceding tables, showing that France is a great importer of raw produce, of which she consumes largely also for her own use, and a greater exporter of valuable manufactures less bulky than those of England, but comparatively more costly. We need but refer to one branch, the export of silk goods. Hence the import is voluminous in bulk and the export less so, but represented by large amounts in point of value. Without being perhaps as active and enterprising as the English, Americans and Germans, the French are remarkably industrious, and possess above all other nations the secret of imparting great value to materials of whatever nature by making the most of them through a dexterous, economical handling, heightened in value by great artistic taste and by secrets in manufacture which other nations have yet to learn.

This will strike every impartial observer at the great exhibition now approaching, and we trust our manufacturers will be benefited by it.

It is argued by those who favor a protective tariff that the two points in which England has the advantage of us in manufacturing are low interest and low wages. It is well known that in England money can be readily borrowed on long time at from 4 to 5 per cent., while here it is rarely, if ever, borrowed at less than 6 to 12 per cent. The difference in wages at the iron mills is very great. Puddling is from 7/9 to 8/9, or \$1.93 1/3 to \$2.00. Here it is from \$3.50 to \$6 currency. Shearing and piling puddled bar is 1/2; in this country shearing is generally paid by the day—\$1.75 in Pittsburgh for example, and 75 cents for keeper. An English roller, 6/6 per ton, or \$1.62 1/2; a heater 2/6, or 62 1/2 cents, and a heater's helper, 6d., or 12 1/2 cents. Bundling and weighing are 2/6, or 62 1/2 cents in England. This gives a total of 13/9, or \$3.25 per ton. In Pittsburgh, heating and rolling 1 1/2 x 11 is \$4.80, and other labor will bring it up to from \$4.25 to \$4.50. Until these differences can be offset, we cannot afford to disregard the fact that they exist.

When unthinking people were clamoring for a vigorous aggressive policy on the part of Great Britain in dealing with affairs in the East, there was a power behind the throne which may have had something to do in influencing the government to adopt a conservative policy. This power was the wealth of the nation invested in material en-

terprises, and its voice found expression in memorials like that of Bolckow, Vaughan & Company, given in our English letter. England may have vast interests at stake in India, but whether she can afford in their defense to sacrifice her greater interests at home, is a question which may well cause her statesmen to think twice before taking a hand in settling the differences between Russia and Turkey.

Arbitration.

The bill before the Pennsylvania Legislature for settling disputes between employers and workmen, which we gave *in extenso* a short time ago, is meeting with but little favor as it stands at present. Employers complain that it requires them to submit their case to arbitration, leaving them no choice. This is attempting to do an impossibility. No legislative body has the right to compel a manufacturer to submit the question of what he shall pay for labor or materials to any man or body of men, and if it should assume such a right and endeavor to force compliance, the issue could be easily evaded by a stoppage of the works. Arbitration, to be of any value, must be entered into voluntarily. The enforcement of the award is properly the subject of enactment and of court process, for it then virtually becomes a contract, or it can be so undertaken as to give the award the force of a legal decision, enforced like any other court process. On the other hand, the workmen object to it even more decidedly. The "Trades Assembly" of Allegheny county, Pa., have examined the bill and prepared a protest against it. Their first objection to it is that it compels the submission of all questions in dispute between labor and capital to arbitrators. They claim that there are but few questions except those that relate to wages that are proper subjects of arbitration. They also claim that a board of nine is too large, three being sufficient, and that the members of the board should not be nominated by the judges but by the parties in interest. The action of the assembly seems to indicate that labor is beginning to oppose arbitration in this country.

What is to be the future of the relations of labor and capital is becoming every day a more and more serious question. There will be disputes—how shall they be settled? Strikes and lockouts are methods unworthy of the age and the intelligence of the parties involved. Arbitration seems to have furnished the only reasonable solution in the past, though it has been severely tested in the last year. It is a subject that should be thoroughly investigated in all its bearings, and more attention should be given to its practical workings where it has been tried. It is not unworthy of a special commission to investigate it.

In this connection it is interesting to note the fact that a bill to promote the amicable settlement of trade disputes is now before the Ohio Legislature. This bill has been prepared after consultation with some of the judges of the Supreme Court, and may be briefly outlined as follows: It provides for the establishment of boards of conciliation, to be composed of two or four persons, half named by the employers and half named by the employees, and an arbitrator selected by the board to make an odd number. If the board cannot agree upon the arbitrator, they shall call upon the Common Pleas judge to act, and he shall either meet with the board or appoint some one to take his place. The questions submitted to the board must be decided within one week, and the arbitrator may examine the books of the employer to settle disputed points as to production and prices. If the parties sign a written agreement to abide by the decision of the board, then such decision is to remain in force six months, and shall be enforced like the decrees of a court. If fifty or more persons are involved in the arbitration, the agreement and decision is to be entered on the court records, and any money or wages awarded becomes a lien on the property of the party against whom the award is made. This last provision is open to the objection that the workmen could not be held pecuniarily responsible for the fulfillment of contracts into which they may enter. We hope, however, the scheme may be given a trial. We can only reach a solution of this question by gaining experience by experiment.

Limitation of output, though it is so roundly berated by those who act on "broad principles," is gaining great favor as a means of bettering the condition of those trades in which there is an overproduction—or what is in effect the same, a capacity for it. The nail and iron manufacturers have adopted it, and we see that the coal producers on the Monongahela River have agreed to limit the production 50 per cent. during the month of March. It may be that this means of bettering things is all wrong, and it may be that the reasoning to show it is all wrong is logical without a flaw, but it accomplishes the present purpose and that is the main thing to a man who is in distress.

Imports of Scrap Iron.—The following table shows the quantity and value of the old or scrap iron imported into the United States from foreign countries during the last seven fiscal years:

Years ending June 30—	Quantity. Net tons.	Value. Dollars.
1871.....	174,502	\$3,782,526
1872.....	258,453	6,040,678
1873.....	288,567	6,641,572
1874.....	37,530	1,495,142
1875.....	36,356	794,136
1876.....	40,355	400,355
1877.....	9,345	146,201
Total.....	791,070	\$19,302,590

Protest by the American Iron and Steel Association Against the Tariff Bill.

At a special meeting of the American Iron and Steel Association, held at the office in Philadelphia, on Tuesday, February 12, 1878, the following address to Congress was unanimously adopted.

To the Honorable the Senate and the House of Representatives of the United States of America, in Congress assembled. The memorial of the American Iron and Steel Association, the membership of which is composed of several hundred manufacturers of iron and steel in 29 States and two Territories of the United States, respectfully represents that the Association is opposed to the enactment into a law of the tariff bill now before the Committee on Ways and Means, and is in favor of the maintenance of present duties, for the following reasons.

First. We are not aware of the existence of any great public necessity for an alteration of the tariff at this time, nor of any public demand for such legislation. The country has been suffering from very serious industrial depression for more than four years, and the patience of our people has been tried to the utmost in bearing financial burdens created by circumstances over which they had no control. During all these years of trial the present tariff has been a stay and a support to all the industrial interests of the country. If it had been a cause of financial troubles, or a hindrance to the recovery of business from its long prostration, it is to be presumed that the farmers, the manufacturers, the railway companies and the mechanics of the country would have petitioned Congress for relief from tariff exactions. But we are not advised that any such petition has been presented to either branch of the National Legislature. We are, however, advised that many thousands of our fellow citizens have addressed both branches of Congress in terms distinctly recognizing the salutary effects of the present tariff, and praying that it be not disturbed unless an exhaustive inquiry into the condition and needs of the industrial interests of the country be first made. We respectfully submit that a hasty alteration of the present tariff would disturb injuriously the business interests of the country, by introducing new elements of uncertainty into the problem of national recuperation which is already sufficiently complicated with purely financial theories. It has, indeed, already produced a depressing effect on all business. Men say to themselves and to one another, "Are we never to have any rest from legislative interference with our legitimate business, or a tariff policy that will remain undisturbed for even five years?" This association protests therefore, against a hasty revision of the present tariff, because it is not necessary and is not asked for by the American people.

Second. Assuming that there exists no necessity for altering the tariff at this time, and that no public demand has been made for such legislation, we should be at a loss to understand the motives for it were we not apprised of the great interest that is taken in our tariff policy by foreign manufacturers and their American agents. We cannot shut our eyes to the fact that these foreign manufacturers and their agents manifest an unbecoming interest in the adjustment of duties on the goods and wares for which they seek a market in this country. It is for their interest that our domestic manufacturers should lack the encouragement afforded by protective duties, and they therefore strive to overthrow these duties. Commercial newspapers and the machinery of the Associated Press are used to communicate their interested advice to the American people and the American Congress. The lobbies of the capital are obstructed by their presence, and even committee rooms which should be sacred to the interests of American citizens are invaded by their assurance. Titled and untitled foreigner visit Washington to urge the abandonment of our protective policy that their own countrymen may be benefited at the expense of our people. Officers employed and paid by the United States government are employed and paid again by enemies of our American industries to defame and malign them and to prepare the way for destructive legislation. These foreign manufacturers, and all their agents in this country, have from time to time brought upon the stage a few Americans who are neither manufacturers, nor farmers, nor workmen, and by rapidly countermarching them before a Congressional audience an attempt has been made to create the impression that large numbers of American citizens are supporters of free trade. Under such circumstances it is not surprising that patriotic and intelligent Congressmen, whose home occupations have not led them to study carefully the causes of our industrial development, should be induced to believe that a hasty revision of the present tariff is desirable. We protest against such legislation as is proposed in the bill now before the Ways and Means Committee, because it is advocated by foreigners and by those who sell foreign goods, whose interests, we respectfully submit, should not be deemed paramount to those of the American masses.

Third. We call the special attention of Congress to the fact that few, if any, consumers of cotton and woolen goods, of silk goods, of iron and steel, of pottery, of chemicals, of paper, and of other American manufactures complain of either the prices or the quality of the goods and wares the manufacture of which is protected by the present tariff. Referring particularly to the industry we represent, we call attention to the low prices and superior quality of all kinds of American iron and steel. Never before in the history of the country have the capabilities of our iron and steel works been so extended as now. Never before have the prices of their products been so low as now. The railroad companies, which are the great consumers of iron and steel, make no complaint of either the quality or prices of domestic iron and steel products. Steel rails of domestic manufacture, costing less than half as much as iron rails cost five years ago, now compose the tracks of our leading railroads, insuring safety and economy in their management, and enabling the companies which operate them to carry agricultural and other freights at rates

much lower than was possible before this country made its own steel rails. The manufacturers of agricultural implements, of stoves, axes, shovels, &c., made from American iron and steel make no complaint. Under the present tariff they are enabled to supply their products to consumers at much cheaper rates than were possible before protection built up the American iron and steel industry. Since the adoption of the present tariff policy of the country it may be truthfully said that in all American manufactures processes have been improved, economies introduced, and all natural resources utilized. If all the results above mentioned have been accomplished by the present tariff, why should it be hastily changed? Why should duties be reduced? We protest against such change and such reduction, as tending to close many manufacturing establishments, to limit production at home, and consequently to increase prices to the consumers of manufactured products.

Fourth. But, it may be argued, if protection has accomplished such results as are above set forth, why is its longer continuance necessary? To which we make reply that protection will always be necessary if we would pay our skilled and unskilled workmen higher wages than are paid in the Old World. Protection is largely, although not wholly, a question of wages. Free trade ignores the welfare of the workmen, and therefore does not concern itself with their wages except to reduce them. If our people were content to receive the wages that are paid abroad—if they were willing to accept the scant comforts and squalid surroundings of European workmen and their families, it is possible that protection might be abandoned and our manufactures still live; but they will not be content with such rewards for their labor, nor would it be for the best interests of society and the nation that they should be. The railroad riots of 1877, unjustifiable and wicked as they were, showed that wages in this country had fallen so far as to endanger domestic tranquility. A reduction of duties at this time would not only still further reduce the wages of labor, but would cause the stoppage of industrial establishments in every State of the Union, thus increasing the distress and the jealousy of workmen toward employers which it should be the object of all wise legislation to mitigate. It should be the aim of every good citizen to cultivate relations of amity and confidence between labor and capital—between those whose enterprise sets on foot great undertakings of public utility and those who bring only the hand of the cunning workman to the support of these undertakings. Because protection by affording higher wages promotes higher social conditions than would be possible without it, and because an opposite policy would be productive of estrangements between capital and labor, and thus add to existing evils, we submit that protection should be adhered to, and we therefore protest against the proposed hasty alteration of the present tariff.

Fifth. The advocate of free trade may here respond that it was protection, and not its opposite, which produced the present hard times in this country, and thus led to social outbreaks. The argument is not even plausible. England is the country of all others which is most devoted to free trade in theory and which practices it the most; yet England is suffering to-day from industrial depression far greater than that which afflicts our own country, as the pitiful tales of want and destitution, and even famine itself, which come to us in the columns of its own newspapers abundantly testify. If there has been over-production with subsequent stagnation in this country, there have been far greater over-production and stagnation in England. If free trade produces such results as these in its own home, we may safely assume that free trade here would have given us more bitter fruits than we have already tasted, for it would have narrowed the opportunities for the employment of American capital and labor by widening the opportunities for the employment of English capital and labor, both of which have urgently needed more extended markets, and would have greedily seized ours. Let us imagine what the condition of our industries would be to-day, if, instead of employing our labor since the panic in manufacturing such products as were made possible by protection, we had imported more largely of foreign goods and increased the army of idle American workmen. Instead of protection being responsible for our hard times, rather are we indebted to it for our escape from complete national and individual bankruptcy. Instead of our industries having been unduly protected, it is self-evident that more complete protection would have employed thousands of idle men during the years which have elapsed since the panic. We protest, therefore, against the sophistry that would hold protection responsible for results which it did not produce, but greatly mitigated—results which owe their origin to our civil war and to purely financial causes. And we protest against a hasty alteration of the present tariff based upon this false assumption of its effects.

Sixth. But it is claimed that our foreign commerce is in need of encouragement, and that the way to afford it this encouragement is to offer inducements to foreign countries to trade with us. It is held that these inducements can only be extended through the concession of lower rates of duties upon foreign products than now prevail. We deny that any such concession is necessary; nations buy of us that which they need and can obtain from us more cheaply than elsewhere, and this they do regardless of our purchases from them. This is the universal law of all trade. England buys of us more of our breadstuffs and provisions in late years than she did when she supplied us with more of her manufactured goods than she now does. China and Japan, upon whose teas we impose no duty, buy of us fewer manufactured goods than from England, which imposes a duty on their tea. Brazil, upon whose coffee we impose no duty, buys from us fewer manufactured goods than from England, which imposes a duty on coffee and buys less of it from Brazil than we do. We submit that the claim that our foreign commerce can only be built up by surrendering the control of our home markets is preposterous; and we submit further that if such result could be ac-

complished at such cost we would not be adequately compensated for the sacrifice. The control of our home markets and the consequent encouragement given to our inland commerce are of far greater value to the American people than an increase of our foreign commerce procured by any instrumentality whatever. For the reason, therefore, that our foreign commerce was not injured by protection, and that the sacrifice of protection would not benefit it nor the nation, we protest against any hasty alteration of the present tariff based upon assumptions antagonistic to these facts.

Seventh. We here distinctly state that we also desire an increase of our foreign commerce. We go as far as any in demanding from our government adequate encouragement for the establishment of lines of steamships or sailing vessels between the principal ports of our own country and the principal ports of other countries with which we do not now enjoy regular commercial intercourse. We believe that such lines are urgently needed to facilitate the introduction of our surplus manufactured goods into foreign countries. We believe that a knowledge by such countries of the excellence of our manufactures, and reasonable facility in procuring them, are the only influences that are needed to increase our foreign commerce. We favor such action by our government as will promote these influences, and we call the attention of Congress to the example of England, our great commercial rival, who has built up her trade with foreign countries, and even now maintains it, by granting liberal subsidies to steamship companies. She carefully guards her subsidies from the taint of corruption, as it is possible for the American Congress to do. We favor such legislation by Congress as will encourage the establishment of regular lines of American steamships or sailing vessels between this country and foreign countries, and we protest against the clause in the bill proposing a hasty alteration of the tariff which would strike a blow at American commerce by admitting to American registry vessels built in foreign countries.

Eighth. So far from protection having been a hindrance to the growth of our foreign commerce, it has been a help to it, as the statistics of our own government fully establish. Our domestic exports of merchandise have steadily increased since the close of the war in 1865, and the whole volume of our foreign trade in both imports and exports has been greater in the last few years than in any similar period of our history. During the last three years the balance of trade between this country and all foreign countries has been largely in our favor—a result which, among other benefits produced by it, has caused a great reduction in our shipments of specie abroad and a diminution in the gold premium at home. These are all the fruits of protection. If we had not built up our manufactures by protection, we would have been compelled to purchase from foreign countries many of the articles we have made at home, and would have had no manufactured products to send abroad. Thus, largely supplying our own wants with the products of domestic industry, and sending to other countries many manufactured products which they needed, we have reversed the slavish commercial conditions which so long characterized our foreign trade, and taken long strides toward financial independence, while at the same time increasing the volume of that trade. Nor has this gratifying result been accomplished by a decrease in the shipment of our agricultural products. We would have those farmers of the country who look to foreign markets for the sale of a portion of their surplus crops to know that the exports of the leading products of their farms have steadily increased under protection. Since the adoption of the present tariff in 1861 our exports of wheat, wheat flour and corn have notably increased. In the same period our exports of other products of the farm have also shown a gratifying increase. These results have been made possible in large part through the improvements in farm machinery which protection has produced by the encouragement it has extended to manufactures and invention—these improvements at once cheapening the cost of agricultural operations, enabling farmers to produce larger crops, and enabling them also to sell these crops in competition with the crops of other countries. Protection, therefore, having increased our foreign commerce, as well as greatly stimulated our internal commerce, we protest against a hasty alteration of the present duties, because any change involving a reduction of duties would tend to disturb the present favorable condition of our commerce with foreign countries and to turn the balance of trade once more against us.

Ninth. The finances of the government are in no condition to bear a reduction of revenues from customs duties. All experience proves that protective duties are most conducive to national prosperity, most motive of the importation of articles of luxury, and therefore most productive of revenue. The bill provides for an average reduction of duties of about 25 per cent. upon the rates now levied. With this reduction an increase of revenue is promised by the framers of the bill, "estimated by treasury experts upon the average of imports for the past six years." It does not require a treasury expert to see that a bill which will tend to impoverish our people will not increase their purchases abroad above the average of the last three years, which is a more reasonable basis for estimating revenues from customs than the one assumed. Nor is a treasury expert needed to determine the fact that a large average reduction of duties with the same volume of imports will not increase but certainly decrease the revenues, no matter how they may be distributed. Such a law as is proposed, by robbing our own people of employment for the benefit of foreigners, and thereby diminishing their ability to purchase the luxuries of foreign countries, would be certain to result in financial embarrassment to the government, as similar so-called revenue measures have heretofore resulted. The bill also transfers to the free list a large number of commodities which are now subject to duty. We protest therefore against the proposed tariff bill now before the Committee on Ways and Means because its pro-

visions are such that a reduction of the revenues of the government would be certain to follow its enactment into a law.

Tenth. The spirit of the bill proposing a hasty alteration of the tariff is unfriendly to American industry because of the encouragement to foreign manufacturers which is noticeable in almost every clause; but its unfriendliness is particularly manifest in those clauses, and there are many of them, which increase duties on such raw materials as are essential to American manufactures but are not produced in our own country. It is also particularly manifest in those clauses which reduce duties on the manufactured products of foreign countries which compete with domestic manufactures composed of the raw materials above alluded to. The American manufacturers and their workmen are thus attacked from two directions. It has been truthfully said that many of these manufacturers would fare better in their dealings with their own countrymen, should the proposed bill become a law, if they would remove their establishments to a foreign country. The unfriendly spirit of the bill is also particularly manifest in the frequent substitution, especially in the schedule relating to iron and steel, of ad valorem for specific duties—a substitution that not only favors fraud in undervaluing invoices, but also yields the least protection to the domestic manufacturer when it is most needed. We protest, therefore, against the proposed hasty revision of the tariff, because the spirit of the bill is unmistakably hostile to American manufacturers and, consequently, to their workmen.

Eleventh. A most fatal error in principle, and one which would lead inevitably to disastrous results in practice, is embodied in the few lines of the bill in question which order that all articles not enumerated shall be admitted free of duty. This provision makes it the interest of all importers to find new and delusive names for their goods, and opposes a most uncalled-for obstacle to the establishment of any new industry. The general rule of tariff legislation, which discourages evasions and promotes clear declarations by imposing higher than the average rates upon unenumerated articles, cannot be safely abandoned. We protest therefore against these additional manifestations in the bill for a hasty alteration of the present tariff of a spirit of hostility against American industrial interests.

Finally. We protest against the bill for a hasty alteration of the tariff because it was prepared in secret, without consultation with representative business men, and in strange disregard of the expressed wish of tens of thousands of the most respectable of our fellow citizens that there might be no revision of the tariff until the condition of the business of the country should first be carefully ascertained. There is not probably another government on the globe that would so glaringly defy public sentiment and so unwisely trifle with the business interests of its people. We protest against this bill because it has been concocted in defiance of one of the highest privileges of the American citizen—the right to petition his government for a redress of grievances and for a continuance of existing blessings.

RESOLUTIONS.

Resolved, That it is the unanimous opinion of this meeting that the present tariff should not be disturbed until the business of the country has fully recovered from its long prostration, and not even then unless a thorough investigation is first made of the business needs of the country, in which investigation representatives of all American industrial interests shall be consulted.

Resolved, That the reduction of the duty on scrap iron to a nominal rate will greatly interfere with the production of pig iron by flooding the country with scrap iron from all parts of the world, and making it a substitute for the former article to the extent of the quantity imported.

Resolved, That section 21, which permits "all materials for the construction, equipment, or repair of vessels of the United States to be imported in bond and withdrawn therefrom without the payment of duty," is an odious discrimination against the makers of beams, angle iron, plate iron, stanchion iron, cables, anchors and other material used in the construction and equipment of iron ships, and subjects their business under conditions of absolute free trade to the competition of foreigners; that such a privilege is neither desired nor asked for by the builders of iron ships, nor is it desirable or advantageous to commerce to encourage the use of inferior foreign material in the construction of American-built ships.

Resolved, That we are opposed to admitting foreign-built ships owned wholly by citizens of the United States to registry or license, and to all the benefits and privileges of vessels of the United States, because it would interfere directly with the well-established industry of building iron ships in our own waters, would deprive thousands of skilled American mechanics and laborers of their vocation and means of subsistence, and would cripple the merchant marine which is training and supporting mariners who are the reliance of our commerce and of our navy.

Resolved, That patriotism, good policy, and common prudence require that American commerce should be transacted on the open seas as well as in interior waters in American-built vessels.

Resolved, That we send greeting to all sister associations in this country which represent industries whose existence is menaced by the proposed tariff bill, and that we earnestly ask them to stand firm in adhering to the protective policy and to the present tariff—not compromising the one nor agreeing to amend the other.

Resolved, That our thanks are due to the manufacturers of Pittsburgh and their workmen for the grand demonstration made by them on the 9th instant in support of protection and in opposition to the proposed enactment of a free-trade tariff.

Resolved, That a committee of members of this association be appointed by the president to bear to Washington the address and resolutions adopted at this meeting, and to impress upon members of Congress the great importance of adhering to the present tariff.

Resolved, That the action of the executive committee of this Association in joining the Industrial League is hereby approved, and

that we heartily commend to all the industries of the country the work of the League, and urge that it receive from them a liberal and generous support, as it is an organization created solely to combine, advocate and sustain the protective policy, and has for many years embraced representatives of the cotton, woolen, silk, pottery, iron, steel and other industries.

NEW CUSTOMS REGULATIONS.

Injurious Practices to be Prevented if Possible.—New Regulations Prescribed by the Secretary of the Treasury.

WASHINGTON, Feb. 15.—In order that proper facilities may be given to merchants, masters of vessels and others in the transaction of customs business, and to prevent certain practices alike injurious to the interests of the importers and the government, the Secretary of the Treasury has ordered:

First.—That returns of all merchandise weighed, gauged, or measured for dutiable purposes shall be made, and the dock books filed in the surveyor's office without delay, and within three days after the discharge of the importing vessel, as required by section 2590 of the Revised Statutes.

Second.—That certified copies or abstracts from such returns shall be furnished by the surveyor to importers or consignees upon application to him.

Third.—In any case where a merchant or a master of a vessel desires a return of weight or gauge before it is possible for the weigher or gauger to make a return to the Custom House of the entire cargo of the vessel the surveyor may, on application to him by the importer, direct the weigher or gauger to make a memorandum of the gross weight or gauge of such merchandise, to be signed by the weigher or gauger, and returned by him to the surveyor for delivery to the applicant therefor.

Fourth.—When any merchant requires a detailed statement of the weight (gross, tare, and net) or gauge of merchandise, application may be made to the surveyor for such statement, who will cause a transcript of the weigher's dock book on file to be made and furnished to such merchant.

Fifth.—In all cases where an importer desires the assorting and weighing of merchandise in lots and parcels, the aggregate of which make up the quantity described in the permit, such assorting and weighing may be done with the permission of the surveyor, provided it involves no increased expense to the United States over the ordinary cost of weighing.

Sixth.—The official certificate of the surveyor will be attached to each return, statement or memorandum furnished importers pursuant to these instructions, and the usual fee of 20 cents will be collected therefor.

Seventh.—Weighers, gaugers, and all subordinate officers of customs are hereby forbidden to furnish copies of returns, statements of weights, or other information respecting cargoes of imported merchandise, except as provided in these regulations, or to allow any person not an officer of the customs to participate in the weighing or gauging of such merchandise.

Eighth.—Weighers, gaugers, and all other officers and employees in the customs service are hereby forbidden to receive from any importer, shipper, master, owner or consignee of any vessel, Custom House broker, or other persons interested in the importation of merchandise any fee, compensation, gratuity, award, or perquisite whatever, directly or indirectly, on account of any service rendered or to be rendered in connection with his office or employment.

The Duty on Iron Tubes.

A manufacturer writes as follows to the Tribune:

An extraordinary effort to influence the action of the Committee of Congress on Ways and Means is being made by American agents in the interest of the English and Scotch manufacturers of iron boiler tubes and pipes. The aim is to change the existing tariff on those articles—a proposal which, however fair it seems to the average reader at first glance, proves, upon an investigation of the actual facts, manifestly unfair. The present duty has been barely sufficient to induce a few Americans to embark in the manufacture of iron boiler tubes and pipes. The process is one of great delicacy, requiring an enormous investment in machinery and large outlay in special preparations for this industry. The American manufacturers, induced by the protection offered by the government, have just completed their establishments and have succeeded in establishing a very high standard of quality in manufacture, but the margin of profit has been so small that few persons have had the courage to assume the necessary outlay. These few have risked large fortunes in that enterprise, solely upon their faith in the government's action.

The foreign tubes, which are compared by the English importers with the American tubes for the purpose of showing that the former are cheaper, are not used in England for boilers, but are the lowest grade of English tubing, and when imported here require to be tipped or "safe-ended" before being used. Their use, as then prepared, is highly dangerous to human life. To this fact the average boiler-maker may sometimes be indifferent, but it is a very grave matter for the consideration of the people.

A change in the present duty at this time must result in entirely destroying the American industry, and consequently in ruin to the American manufacturer. The government, in this matter, should be guided by motives of public policy, and, unless a reduction of the tariff is to prove a great gain to the public at large, the American manufacturers should not be ruined. What will be the good effect to the public? None; for the price list of the British inferior tubing has fluctuated with every variation in the American article, and the price of the former has been only a trifle less than that of the best American tubing, which has been, therefore, generally preferred. In case the duty is removed, it means an increased price for British tubing and a total absence of the American tubing. In the year 1863 tubes rose from 35 cents to 71 cents a foot, in the next year falling back to 34 cents, from local

causes that could not possibly affect British tubes. Yet the prices of British tubes rose with the American prices. For the last year the English have not been able to compete with us, and now they urge a reduction in the tariff. American tubing has decreased in price steadily from 43 1/2 to 10 cents a foot in 1854 to 17 cents in 1874, and this has been accomplished by the American manufacturers.

The Bailment of Railroad Iron—Proof.

In the case of *Arnott et al vs. the Kansas Pacific Railroad Company*, Supreme Court of Kansas, September, 1877, the *Railway Age* makes the following summary:

"Where old iron is delivered to be manufactured, with new iron furnished by bailee, into rails, the transaction is a bailment, *locatio operis facienti*, if said new iron is merely accessory to the old. It is incumbent upon bailor in such cases to prove that the principal part was delivered himself by and the accessory by bailee, and it is proper for said bailee to prove the material of the new rails."

The plaintiffs in error, who were constables of Shawnee county, held several executions issued upon judgments against the Topeka Rolling Mill Company, and levied upon certain iron in the possession of the company. Defendant in error brought replevin for the property. It claimed to be the owner of the iron, and that the company was only its bailee, the proof tending to show that the railway company entered into contract with the rolling mill company by which the latter would roll into new bars or rails a large quantity of old iron delivered to it by said railroad company, and put in a certain amount of new iron called heat iron, to form the head or top of the rails. The evidence did not show how many tons of old iron the defendant in error consigned to, nor how many tons of new rails it had received from, the rolling mill company. A judgment having been rendered for the railway company the case was carried to the Supreme Court, where it was held, "By the rules of the common law and the decisions in this country, the transaction was a regular contract of hire, as contradistinguished from an irregular contract of hire, if the railway company provided the chief or principal part of the material of the new rails, and if such was the case, the proprietary interest in the iron let was not changed, but remained in the railway company. This conclusion is based on the rule, that as the law does not favor tenancy in common in such transactions" the owner of the principal part "acquires the right to whatever minor accessory additions are made in bringing it to its new form." Slaughter vs. Green, 1 Rand. 3; Foster vs. Pettibone, 7 N. Y. 433; Pierce vs. Schenk, 3 Hill, 28; Wilson vs. Nason, 4 N. Y. 156; Pulcifer vs. Page, 32 Maine, 404; Merritt vs. Johnson, 7 John. 472; Story on Bailments, § 8 420, 423; Gregory vs. Stoyker, 2 Den., 629.

It was incumbent on the part of the defendant in error to show by proof that as to the 25 tons of new rails which were replevined, the material thereof was principally the property of the Kansas Pacific Railway Company, and the refusal of the court to permit the president of the rolling mill company to be cross examined on the subject, at the time the matter was a proper subject of examination, left the question of the amount of material furnished by each company in the manufacture of the new rails to be decided upon other testimony, and this was of an indirect and indefinite character. The best evidence upon this point was held inadmissible. Reversed and a new trial awarded.

No fewer than 134 new lines of business have been added to the trade subdivisions in the London Post Office Directory for 1878. These include boilers in concrete, card-clothing manufacturers, contractors for fetes and rejoicings, explosive manufacturers, gluten bread importers, lametta makers, oak fencing contractors, picric acid manufacturers, salicylic manufacturers, steering apparatus manufacturers, tanning extract manufacturers, thermo-electric battery manufacturers, and last, not least in importance, even in these days of improved drainage and filtration, water-testing apparatus manufacturers.

FOR SALE,
A Wholesale Tin Plate and Tinner's Supply House.

A splendid opportunity is now offered to anyone desiring to engage in the above-mentioned business, in an established house of 25 years' standing. The entire concern is offered for sale at the present ruling cost prices. This house is the only one of the kind in a state having a population of over two millions, and a centering point for thirteen different railroads, and located in a Western State, east of the Mississippi and north of the Ohio river.

This house has transacted a business of over four hundred thousand dollars per annum without the aid of a traveling salesman.

Reason for selling: The present proprietor unfortunately invested too largely in unproductive real estate, and has not the cash capital to run the business properly. He is unwilling to dispose of his real estate at present price, but thinks best to close out the store, rather than sacrifice so much on his city property; hence this notice. For further particulars address

DAVID H. JAMES,
25 Cliff St., New York City.

For Rent,
Large Brick Store Room,
situated on the Public Square, in the city of Lima, Ohio. Is well suited for the Hardware business. For particulars, address

FRANK H. CRALL, Lima, O.

WANTED.—Second hand Blake or Knowles Steam Pump, size 10, 6, 12; also second-hand S. A. Wood's Center, Planing and Molding Machine, plane two sides, double feed rollers. Address, WM. J. FRYER, JR., 104 Goerck St., New York.

Special Notices.

AUCTION NOTICE.

Special Sale,
Hardware, Cutlery and House Furnishing Goods.
BISSELL & WELLES,
Auctioneers.

Will hold a large Special Sale, without Reserve, by order of the Manufacturers and Importers of Hardware, Cutlery and House Furnishing Goods, comprising a large assortment of Shelf Hardware, C. S. Axes and Hatchets, A. E. Hammers, Rules, Locks, Curry Combs, Tacks, Finishing Nails, Files, Burshes, Trowels, Sad Irons, D. H. and L. H. Shovels and Spades, Extra and No. 1 Pick and Ax Handles, &c., &c.

TABLE AND POCKET CUTLERY
will be sold on Wednesday, Feb. 27th, and will consist of about 12,000 doz. AMERICAN TABLE CUTLERY, 1st and 2d quality; also a large line of WHITE BONE TABLE Knives and Forks, capped and uncapped ends, desirable goods; 300 doz. SOLID BONE TABLE and DESSERT KNIVES, ONLY FIRST QUALITY; Ivory and S. P. Table Knives, Pocket Knives, Scissors, Shears, Carvers, Bread Knives, fine line of eight-day Clocks; also 1200 doz. German Silver Spoons and Forks, assorted patterns, &c., &c.

Goods will be sold in quantities to suit city and country trade. Catalogues ready morning of sale.

Upright Hammer Wanted.
A small Upright Hammer, of about one-half ton weight, new or second-hand, to run 500 revolutions. Address P. O. Box 344, Jersey City, N. J.

For Sale,
The stock and good will of an old-established Hardware and Stove House, with a good trade, in a town of about 14,000 inhabitants. The stock is well assorted, and will invoice about \$7500. Best of reasons given for wishing to sell. Address H. M. CLARK & CO., Galesburg, Ills.

New and Second-Hand Tools.

One 36 in. x 24 ft. triple geared lathe; one 18 in. x 10 ft. lathe; one 42 in. x 16 ft. planer; one 30 in. x 26 ft. lathe; one 27 in. x 28 ft. do.; one heavy upright drill, self feed and back gears; one Putnam gear cutter; one No. 2 Wilder press; one No. 4 Siles do.; one Smith & Gorvin milling machine; one very heavy milling machine; one 28 in. x 15 ft. English lathe, cheap; two 10 h. p. Baxter Engines; one 6 h. p. do.; one Harkins 6 h. p. engine; one 60 in. x 75 ft. saw mill.

The Bullard Machine Co., Limited,
No. 14 Dey Street, New York.

SITUATION WANTED.—BY A GENTLEMAN who has had 15 years' experience in all the departments of a wholesale commission Hardware house, as bookkeeper and correspondent in a commission or jobbing house, or as secretary and correspondent in a manufacturing establishment. Can give undoubted reference as to capability and character, and for a position of trust could give security if required. Address R. O. J., care of Samuel Wilkins, 33 Murray St., N. Y. City.

To Nail Makers.
For Sale or Lease on reasonable terms, the

North Western Rolling Mills and Nail Works.

Situated at Dunleith, Ills., on Mississippi River, and close to track of Ills. Cent. R. R. New and improved machinery in best condition. Scrap iron and coal to be had cheap. A splendid chance to practical man with moderate capital. Reason for selling, proprietor does not understand business. Will exchange for good lands, iron lands preferred. Address

G. T. WALKER, Proprietor,
Lancaster, Wisconsin.

FOR SALE,
Architectural Iron and Wooden Patterns, Tools, Machinery, &c.,

An endless variety of Iron Railing Patterns, Roof Crestings, Leaf Capitals, Columns, Cornices, Window Lintels and Sills, Guards, Ornaments, etc., etc. Also Foundry Cranes, Flasks, etc.; Blacksmith Tools, Forges, etc.; Lathes, Planers, Drillers, Punches, Pattern Shop Machinery, Benches, etc., being all contained in the late Geo. R. Jackson's extensive iron works, together with surplus patterns belonging to the Elma Iron Co.

For foundries in the West or South whose owners desire to do Architectural Iron Work, or extend that branch of their business, an unusual opportunity is offered to purchase, in large or small lots, everything necessary for the business at reasonable prices. Near-by New York purchasers are not desired. Apply by letter or in person to

WM. J. FRYER, JR.,
104 Goerck St., New York.

CINTI STEEL MARKET.

Having been engaged for the past 12 years at this point in conducting the interest of two of the largest Steel Works of Pittsburgh, am now open for a business engagement in the same line. Would be pleased to correspond with any party desiring a representation here. Address

W. R. FULLERTON, Cinti, O.

Wanted,
A

SECOND-HAND STEAM HAMMER
of from 5 to 10 tons weight, also a

LARGE DRILL,
suitable for a forge. Address, with price, description, &c.,

JOSEPH D. WEEKS,
Office of The Iron Age, 77 4th Ave., Pittsburgh, Pa.

For Sale,
The Hardware Business, Stock, Trade and Good Will owned by the estate of the late HUBERT W. EASTON, in Bradford, Orange Co., Vermont. For information, apply in person or by letter to

H. A. WINSHIP, Attorney,
Bradford, Vt.

Special Notices.

DROP FORGINGS.

The TRENTON VISE & TOOL WORKS, Trenton, N. J., having increased their facilities, are now able to do all kinds of

Iron and Steel Drop Forgings
in quantities to order at reasonable rates.

HERMANN BOKER & CO., Proprietors,
101 & 103 Duane St., N. Y.

SPECIAL NOTICE.

The undersigned offer their services as agents to

American Producers of Metals.

They represent foreign brands of

Zinc, Russia Iron, Hoop Iron, Window Glass, Cutlery and Guns.

LOUIS WINDMULLER & ROELKER,
30 Beale Street, N. Y.

Torrence & Co.,

General Shipping & Commission Merchants,

197 Walnut Street, Philadelphia.

We are acting for a number of prominent manufacturers in finding a foreign market for their goods, and would be pleased to correspond with any parties who may desire to develop this trade.

PAUL HYAN, 16 Magazine Strasse, Berlin, Prussia.

Is desirous of assuming a few more agencies for Germany of American manufacturers of reputation. He is general agent of Messrs. Gardner & Co., New York, and several iron works, and begs to state that he is a man of standing, responsibility and long experience in architectural and manufacturing matters. During 20 years he has been proprietor of one of the most prominent manufacturing factories of architectural goods, and is now owner of a commodious store, centrally located at Berlin, where he can exhibit goods and samples to advantage. Arrangements will, if desired, be made by him to have his constituents properly represented at the Paris Exposition of 1878. References: Messrs. Gardner & Co.; Messrs. Steinway & Sons, New York.

AUSTRALIA.

AMERICAN HARDWARE CO.,
No. 9 WILLIAM STREET, MELBOURNE, AUSTRALIA.

Solicit correspondence with American manufacturers desirous of representation in the Australian Colonies. Consignments will have prompt attention. References furnished.

International Exhibition

OF

Agricultural Machines and Implements,

Hamburg, Germany, 1878.

Under co-operation of the Section for Agriculture and Horticulture at Hamburg, and the Union of German Manufacturers and Dealers in Agricultural Machines, an International Exhibition of Agricultural Machines and Implements will be held at Hamburg, Germany, beginning on the 13th of June, 1878, and ending the 17th of the same month. Circulars and printed notices will be sent out for sending goods to the said International Exhibition are mailed free of charge, upon application, from the office of the undersigned committee, at

No. 25 A B C Street, Hamburg.

The Committee for the International Exhibition of Agricultural Machines and Implements, at Hamburg, 1878.

ALF. VON OHLENDORFF, President.

HERM. SCHEMMANN, Treasurer.

DR. RICHARD SEELEMANN, Sec'y.

JOBGING HARDWARE BUSINESS

For Sale.

The undersigned offer for sale the stock, fixtures and the good will of their business, which has been established in Chicago for the past 14 years. Stock is fresh, well assorted and adapted to the wants of the Western trade. For parties desirous of going into business this is an opportunity that seldom presents itself, as the business has been a paying one and extends throughout the Northwest. Address

MILLER BROTHERS & KEEP,
Chicago, January 19, 1878. 19 Lake Street.

For Sale,

an old-established Stove Foundry, with excellent molding sand on the premises, located convenient to the Lehigh coal and iron region, and at the junction of six railroads, giving superior facilities for shipping to all points. Address

H. A. PATTERSON,
27 Park Row, New York.

AMERICAN TOOLS & HARDWARE.

Manufacturers and Merchants having specialties they wish to introduce to the British markets, should communicate with

S. H. JENNINGS,
Deep River, Conn.,

Purchasing Agent for

WILLIAM MARPLES & SONS,
Hibernia Works, Sheffield,

and 14 Ivy Lane, London, E. C., England.

To Manufacturers and Jobbers of

Hardware, Cutlery, &c.

Manufacturers and Jobbers, having surplus stocks or goods that from any cause are unsaleable upon which they wish to realize, or assignees who have stocks to dispose of, will find a cash purchaser by communicating with

W. M. CALDWELL,

Dealer in

Job and Auction Lots of Hardware,

Cutlery, &c.,

102 Chambers St., New York.

Price Book

for General Hardware.

Half leather, \$10; full leather, \$12. Send for descriptive circular.

Letters from customers.

"I observe your 'ad' in The Iron Age of 15th. Inclosed I hand you \$12. Please send full bound book at once."

BUELL LAMBERSON, 27 Chambers St., N. Y.

WANTED.—SITUATION AS SHEET

Roller; has had 17 years' experience in Boiler-plate and small mills.

Address

"STEEL ROLLER,"
Office of The Iron Age, 83 Beale St., New York.

Special Notices.

JOBGING HARDWARE BUSINESS

For Sale.

Obliged to retire from business on account of sickness, we offer for sale our jobbing stock of Hardware, which is in prime merchantable condition, with fixtures complete, at a great bargain. Established in 1866. Stores occupied by us, best stand in city, can be leased at low price. Peculiar condition of jobbing trade here at this time presents rare chance for success.

Stock also offered for wants of merchants near Toledo at cost. Correspondence solicited.

HAMILTON & CO.,

Jobbers of Hardware,

Toledo, Ohio.

February 12, 1878.

The Sherman Process Company,

PROPRIETORS OF THE

"SHERMAN" PATENTS,

Is now ready to

Issue Licenses to use the said Process

under a Royalty.

The Process is used to great profit in the

Puddling Furnace, Martin-Siemens Furnace,

Bessemer Converter, Crucible, and for

Gray Iron Castings.

The use of the Process does not involve any changes in the furnaces or in the present manner of working them, nor does it increase the labor, but on the contrary saves material, fuel, labor and time.

The chemicals used are not expensive, their cost not exceeding 5 cents per ton of product, and the charge for royalty is placed at a low price so as to bring the Process into general use.

By the use of this Process a large percentage of the cheaper grades of iron and steels can be made into a good merchantable product.

Iron which have been found impossible to use either alone or in mixture with other irons are now being profitably used by means of this Process.

It improves the working of both poor and good iron or steels, a better product being obtained by its use than is possible without it. It makes the molten metal more fluid and the product more sound, homogeneous and ductile.

It makes less skill and scrap and less waste in the finished product.

It greatly improves sulphurous and phosphorus iron and steels, making them less red and cold short, and produces a more even product.

For castings that are to be tapped and have threads cut upon them, it allows a closer, stronger to be used, leaving it soft for the tool to readily cut.

By the use of this Process in the Bessemer or Martin-Siemens furnace, good steel rails can be made from a mixture of from 30 to 50 of old iron rails and the balance good stock. Thousands of tons of steel rails made by this Process, as above are now being used in France.

The Process will be demonstrated without expense, at the works of parties applying, and the amount of royalty to be charged for its use will be furnished upon application to

The Sherman Process Co.,

No. 9 Pemberton Square,

BOSTON, MASS.

See page 17 of The Iron Age, of Oct. 25, 1877.

For Sale,

Stove Foundry, Patterns, Flasks and

Materials.

In order to settle the estate of the late James Wager, his executors offer for sale the Stove Foundry, together with the entire stock of Patterns, Flasks, Stoves, Ranges and all material belonging to the Wager Stove Company. The foundry is situated in the northern part of the village of West Troy, on the Erie Canal, and convenient to the Hudson River and the railroads. The assortment of Patterns for Ranges, Cook and Heating Stoves is very full and complete, and a rare opportunity is offered to obtain a complete outfit for the stove business on very advantageous terms. Would prefer to sell the entire lot of patterns, &c., together with the foundry property, to one party, or would lease the foundry on very favorable terms to a party purchasing the patterns, &c., or would sell the patterns, flasks, &c., delivered to railroad or boat. Will forward illustrated catalogue of goods manufactured by us to parties desiring to purchase on application. Address

WAGER STOVE CO., Troy, N. Y.,

or Isaac G. Johnson, Spuyten Duyvil, N. Y.

Notice of Removal.

20 CHAMBERS ST., NEW YORK Jan. 1, 1878.

I beg to advise that I have removed from Nos. 101 and 103 Duane street to No. 20 Chambers street, where samples can be inspected and communications addressed.

Yours respectfully,

ASLINE WARD,

Agent for

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Feb. 20, 1878.

The continued dullness in Wall street, in view of the imminent passage of the Silver bill, is probably due to the fact that its first effect has been "discounted." Should it become a law, those who now claim that it will benefit rather than injure public credit, will find that first appearance, apparently confirmatory of this view, are delusive. Money continues easy and in abundant supply. The rate on call loans is 4 @ 5 %; on prime business paper, 5 @ 6 %.

Contrary to the general expectation, gold declined to 101 1/4. The following table shows the daily range of the premium:

	Highest.	Lowest.
Thursday	101 3/4	101 1/4
Friday	101 3/4	101 1/4
Saturday	101 3/4	101 1/4
Sunday	101 3/4	101 1/4
Tuesday	101 3/4	101 1/4
Wednesday	101 3/4	101 1/4

The market for government bonds has been active and strong, prices advancing 1/4 @ 3/4, and 1/2 @ 3/4 in London. There has been an active speculation in governments, having for its object the creation of a demand for bonds returned here for sale. State bonds have been quiet and steady. Railway mortgages firm and active. We give below the closing quotations of governments.

The stock market has been unsettled, without important fluctuations. Much of the time it has been very dull. The coal stocks have exhibited most weakness. The principal dealings were in Lake Shore, D. L. and W., St. Paul, Northwest, Western Union and Del. and Hudson Canal. We give below the closing quotations of active shares.

The weekly statement of the New York banks shows an increase in total reserve of \$833,300 made up of a gain of \$364,700 specie, less a loss of \$31,400 in legal-tender notes. The surplus reserve is now \$14,824,200 or \$728,550 more than last week. The following is a comparison of the bank averages for the last two weeks:

	Feb. 9.	Feb. 16.	Differences.
Loans	\$242,057,200	\$244,859,000	Dec. \$2,801,800
Specie	32,145,000	33,011,600	Inc. 866,600
Legal tenders	34,877,000	34,845,600	Dec. 31,400
Deposits	211,713,000	212,132,000	Inc. 419,000
Circulation	19,687,100	19,781,200	Inc. 94,100

The following tables show the foreign trade movements for the week:

For week ended Feb. 16:

	1876.	1877.	1878.
Total for week	\$9,018,313	\$7,022,009	\$6,411,214
Prev. reported	39,667,792	34,149,165	31,404,163

Included in the imports of general merchandise were articles valued as follows:

	Quantity.	Value.
Avails	130	\$1,168
Brass goods	6	2,106
Bronzes	1	544
Chains and anchors	13	381
Cutlery	4	10,667
Gas fixtures	1	712
Guns	7	726
Hardware	4	256
Iron pig, tons	100	1,595
Iron ore, tons	71	1,595
Iron, other, tons	35	1,604
Metal goods	91	10,948
Needles	3	622
Old metal	13	6,537
Platina	1	3,906
Plated ware	1	114
Per caps	7	7,512
Steel	1	9,706
Tin, bxs.	7,579	41,159
Tin, 13,029 slabs	1,219,604	185,177
Wire	119	4,596

EXPORTS, EXCLUSIVE OF SPECIE.

For week ended Feb. 19:

	1876.	1877.	1878.
For the week	\$6,651,235	\$4,670,161	\$7,283,357
Prev. reported	27,829,212	38,890,437	37,847,737

Since Jan. 1.....\$34,480,446 \$38,560,598 \$45,133,088

EXPORTS OF SPECIE.

For week ended Feb. 16:

	1876.	1877.	1878.
Total for week	\$63,200	\$63,200	\$63,200
Previously reported	1,984,515	5,619,986	12,165,171

Same time in 1876.....5,619,986

Same time in 1875.....12,165,171

Same time in 1874.....4,790,835

Same time in 1873.....1,775,043

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. Currency 6's	101 1/4	101 3/4
U. S. 6's 1881 registered	101 1/4	101 3/4
U. S. 6's 1881 coupon	101 1/4	101 3/4
U. S. 6's 1885 new reg.	101 1/4	101 3/4
U. S. 6's 1885 reg.	101 1/4	101 3/4
U. S. 6's 1885 coupon	101 1/4	101 3/4
U. S. 6's 1886 reg.	101 1/4	101 3/4
U. S. 6's 1886 coupon	101 1/4	101 3/4
U. S. 10-40 reg.	101 1/4	101 3/4
U. S. 10-40 coupon	101 1/4	101 3/4
U. S. 4 1/2's 1881 registered	101 1/4	101 3/4
U. S. 4 1/2's 1881 coupon	101 1/4	101 3/4
U. S. 4 1/2's 1882 reg.	101 1/4	101 3/4
U. S. 4 1/2's 1882 coupon	101 1/4	101 3/4
U. S. 4 1/2's 1883 reg.	101 1/4	101 3/4
U. S. 4 1/2's 1883 coupon	101 1/4	101 3/4

The following were the closing quotations of active shares:

	Bid.	Asked.
Atlantic and Pacific Telegraph	35 1/4	35 3/4
Chicago and Northwest	35 1/4	35 3/4
Chicago, Rock Island and Pacific	92 1/4	92 3/4
Chicago, Bur. and Quincy	92 1/4	92 3/4
Col. and Indiana Central	25 1/4	25 3/4
Clev. and Ind. Ind.	33 1/4	33 3/4
Cleveland and Pittsburgh	59 1/4	59 3/4
Chicago and Alton	77 1/4	77 3/4
Consolidation Coal	25	25 1/4
Can. Harb.	25	25 1/4
Delaware, Lack. and Western	47 1/4	47 3/4
Delaware and Hudson Canal	47 1/4	47 3/4
Express-Adams	100	100 1/4
" American	48 1/4	48 3/4
" United States	20 1/4	20 3/4
" Wells, Fargo & Co.	84 1/4	84 3/4
Erie	9 1/4	9 3/4
Harlem	14 1/4	14 3/4
Hanibal and St. Joseph	11	11 1/4
Illinois Central	74 1/4	74 3/4
Kansas Pacific	7 1/4	7 3/4
Lake Shore	60 1/4	60 3/4
Michigan Central	60 1/4	60 3/4
Morris and Essex	75 1/4	75 3/4

Milwaukee and St. Paul	37 1/4	37 3/4
Mariposa	1 1/4	1 3/4
New York Central	105 1/4	105 3/4
New Jersey Central	105 1/4	105 3/4
New Jersey Southern	105 1/4	105 3/4
Ohio and Mississippi	75 1/4	75 3/4
Pacific Mail	23 1/4	23 3/4
Pittsburgh and Fort Wayne	88	88 1/4
Quicksilver	17	17 1/4
St. Louis and Iron Mountain	55 1/4	55 3/4
St. Louis Kansas City Northern	55 1/4	55 3/4
Toledo, Wash. and Western	30 1/4	30 3/4
Union Pacific	15 1/4	15 3/4
Western Union Telegraph	70 1/4	70 3/4

The New Freight Rates to the West

Below will be found a complete list of the new rates adopted by the pool lines from New York, Boston and Providence, R. I., to all the principal points in the West, taking effect on all shipments made on or after the 15th inst. These rates, it is expected, will be in force at least until the opening of canal and lake navigation, as the Grand Trunk Railway has become a party to the arrangement by agreeing to leave to the Pool Commissioner, Mr. Albert Fink, the fixing of the rates they shall make, and the proportion of tonnage to which they are entitled from New York and Boston. They will be allowed to make a small concession on the rates on account of the longer distance they have to carry the goods, and consequent longer time necessary to deliver their freight. The rates are given in cents per 100 pounds:

	1st Class.	2d Class.	3d Class.	4th Class.
Buffalo, N. Y.	43	35	30	23
Black Rock, N. Y.	43	35	30	23
Dunkirk, N. Y.	43	35	30	23
Niagara Falls, N. Y.	43	35	30	23
Rochester, N. Y.	43	35	30	23
Suspension Bridge, N. Y.	43	35	30	23
Erie, Penn.	43	35	30	23
Oil City, Penn.	43	35	30	23
Franklin, Penn.	43	35	30	23
Pittsburgh, Penn.	43	35	30	23
Ashtabula, Ohio	43	35	30	23
Bellefontaine, Ohio	43	35	30	23
Bellaire, Ohio	43	35	30	23
Chillicothe, Ohio	43	35	30	23
Cleveland, Ohio	43	35	30	23
Crestline, Ohio	43	35	30	23
Columbus, Ohio	43	35	30	23
Cincinnati, Ohio	43	35	30	23
Carthage, Ohio	43	35	30	23
Delaware, Ohio	43	35	30	23
Dayton, Ohio	43	35	30	23
Findlay, Ohio	43	35	30	23
Fremont, Ohio	43	35	30	23
Franklin, Ohio	43	35	30	23
Galion, Ohio	43	35	30	23
Lima, Ohio	43	35	30	23
Massillon, Ohio	43	35	30	23
Marietta, Ohio	43	35	30	23
Medina, Ohio	43	35	30	23
Mansfield, Ohio	43	35	30	23
Middletown, Ohio	43	35	30	23
Miamisburg, Ohio	43	35	30	23
Newark, Ohio	43	35	30	23
Piqua, Ohio	43	35	30	23
Ravenna, Ohio	43	35	30	23
Shelby, Ohio	43	35	30	23
Springfield, Ohio	43	35	30	23
Sidney, Ohio	43	35	30	23
Sharon, Ohio	43	35	30	23
Sandusky, Ohio	43	35	30	23
Toledo, Ohio	43	35	30	23
Urbana, Ohio	43	35	30	23
Tiffin, Ohio	43	35	30	23
Vernon, Ohio	43	35	30	23
Portsmouth, Ohio	43	35	30	23
Zion, Ohio	43	35	30	23
Youngstown, Ohio	43	35	30	23
Zanesville, Ohio	43	35	30	23
Louisville, Ky.	43	35	30	23
St. Louis, Mo.	43	35	30	23
Hannibal, Mo.	43	35	30	23
Louisiana, Mo.	43	35	30	23
St. Joseph, Mo.	43	35	30	23
Kansas City, Mo.	43	35	30	23
Anderson, Ind.	43	35	30	23
Auburn, Ind.	43	35	30	23
Butler, Ind.	43	35	30	23
Crawfordsville, Ind.	43	35	30	23
Evansville, Ind.	43	35	30	23
Fort Wayne, Ind.	43	35	30	23
Elkhart, Ind.	43	35	30	23
Goshen, Ind.	43	35	30	23
Green Castle, Ind.	43	35	30	23
Indianapolis, Ind.	43	35	30	23
Jeffersonville, Ind.	43	35	30	23
Kokomo, Ind.	43	35	30	23
Lafayette, Ind.	43	35	30	23
Logansport, Ind.	43	35	30	23
Laporte, Ind.	43	35	30	23
Madison, Ind.	43	35	30	23
Mishawaka, Ind.	43	35	30	23
Muncie, Ind.	43	35	30	23
New Albany, Ind.	43	35	30	23
Peru, Ind.	43	35	30	23
South Bend, Ind.	43	35	30	23
Seymour, Ind.	43	35	30	23
State Line, Ind.	43	35	30	23
Terre Haute, Ind.	43	35	30	23
Richmond, Ind.	43	35	30	23
Vincennes, Ind.	43	35	30	23
Waterloo, Ind.	43	35	30	23
Alton, Ill.	43	35	30	23
Ashland, Ill.	43	35	30	23
Arcola, Ill.	43	35	30	23
Beardstown, Ill.	43	35	30	23
Bloomington, Ill.	43	35	30	23
Chicago, Ill.	43	35	30	23
Champaign, Ill.	43	35	30	23
Clinton, Ill.	43	35	30	23
Calumet, Ill.	43	35	30	23
Danville, Ill.	43	35	30	23
Decatur, Ill.	43	35	30	23
Edgingham, Ill.	43	35	30	23
Edgewood, Ill.	43	35	30	23
Jacksonville, Ill.	43	35	30	23
Joliet, Ill.	43	35	30	23
Litchfield, Ill.	43	35	30	23
Lincoln, Ill.	43	35	30	23
Mattison, Ill.	43	35	30	23
Mazon, Ill.	43	35	30	23
Pana, Ill.	43	35	30	23
Paris, Ill.	43	35	30	23
Peoria, Ill.	43	35	30	23
Pekin, Ill.	43	35	30	23
Quincy, Ill.	43	35	30	23
Shawneetown, Ill.	43	35	30	23
Springfield, Ill.	43	35	30	23
Taylorville, Ill.	43	35	30	23
Tolono, Ill.	43	35	30	23
Urbana, Ill.	43	35	30	23
Vandalia, Ill.	43	35	30	23
Rock Island, Ill.	43	35	30	23
Algonquin, Mich.	43	35	30	23
Albion, Mich.	43	35	30	23
Battle Creek, Mich.	43	35	30	23
Charlotte, Mich.	43	35	30	23
Cassopolis, Mich.	43	35	30	23
Detroit, Mich.	43	35	30	23
Grand Rapids, Mich.	43	35	30	23
Grand Haven, Mich.	43	35	30	23
Holland, Mich.	43	35	30	23
Hillsdale, Mich.	43	35	30	23
Jackson, Mich.	43	35	30	23
Kalamazoo, Mich.	43	35	30	23
Lansing, Mich.	43	35	30	23
Manchester, Mich.	43	35	30	23
Monroe, Mich.	43	35	30	23
Muskegon, Mich.	43	35	30	23
Nottawa, Mich.	43	35	30	23
Plainwell, Mich.	43	35	30	23
Port Huron, Mich.	43	35	30	23
St. Joseph, Mich.	43	35	30	23
Schoolcraft, Mich.	43	35	30	23
Sturgis, Mich.	43	35	30	23
Three Rivers, Mich.	43	35	30	23
Milwaukee, Wis.	43	35	30	23
New Orleans, La.	43	35	30	23
Jackson City, Kan.	43	35	30	23
Lawrence, Kan.	43	35	30	23
Leavenworth, Kan.	43	35	30	23
Topeka, Kan.	43	35	30	23
Wichita, Kan.	43	35	30	23
Black Hawk, Col.	43	35	30	23

GENERAL HARDWARE.

The condition of the market is much the same as at our last writing. Many of the buyers who were here last week have left for their homes without, so far as we can learn, having placed any large orders. We notice the presence of some large buyers from the West and Southwest in the city this week, and hopes are entertained that trade will soon assume satisfactory proportions. As regards values, they are, with a few exceptions, firm, and few changes of importance have transpired since our last writing.

Wash Bowls, Plain, 1 C.			
Nos.	6	6 1/2	7
Per doz.	\$1.40	\$1.75	\$2.00
Wash Bowls, Retinned.			
Nos.	6	6 1/2	7
Per doz.	\$2.00	\$2.35	\$2.65
Wash Bowls, Retinned (with rings).			
Nos.	12	13	14
Per doz.	\$2.50	\$2.85	\$3.00
Wash Bowls, Retinned (with rings).			
Nos.	12	13	14
Per doz.	\$3.40	\$3.85	\$4.00
Wash Bowls, Retinned (with rings).—Foot loose.			
Nos.	100	100	100
Per doz.	\$2.55	\$3.15	\$3.50
Wash Bowls, Retinned (with rings).—Foot loose.			
Nos.	100	100	100
Per doz.	\$2.45	\$2.90	\$3.25
Water Pails, Retinned.			
Nos.	8	8 1/2	9
Per doz.	\$1.50	\$1.75	\$1.90
Wash Bowls, Retinned.			
Nos.	12	13	14
Per doz.	\$2.50	\$2.85	\$3.00
COMMON STAMPED WARE, ETC.			
Last Adopted February 14, 1878.			
Bucket Covers.			
Inch.	4 1/2	5 1/2	6 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Quart.			
Inch.	4 1/2	5 1/2	6 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Cake Box Covers.			
Inch.	4 1/2	5 1/2	6 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Pot Covers.			
Inch.	7 1/2	8 1/2	9 1/2
Per gross.	\$1.50	\$1.80	\$2.00
T. K. Breasts (only).			
Inch.	7 1/2	8 1/2	9 1/2
Per gross.	\$1.50	\$1.80	\$2.00
T. K. Breasts with Plain Covers.			
Inch.	7 1/2	8 1/2	9 1/2
Per gross.	\$1.50	\$1.80	\$2.00
T. K. Breasts with Rimmed Covers.			
Inch.	7 1/2	8 1/2	9 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Grater Plates.			
Sheet.	1/2	3/4	1
Per gross.	\$1.50	\$1.80	\$2.00
Scalloped Cake Pans.			
Without Tubes, per gross.	\$1.50	\$1.80	\$2.00
With	\$1.50	\$1.80	\$2.00
Stamped Square Pans.			
Sheet.	1/2	3/4	1
Per gross.	\$1.50	\$1.80	\$2.00
Milk Skimmers, Plain or Pierced, per gross.			
Sheet.	1/2	3/4	1
Per gross.	\$1.50	\$1.80	\$2.00
Letticed Plates.			
Inch.	7 1/2	8 1/2	9 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Steamer Bottoms. Add \$1 per gross, or 10 cents per doz. to list of Pot Covers.			
Tin Stove Pipe Rings.			
Inch.	4 1/2	5 1/2	6 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Coffee Boiler Lips.			
To Rivet.	Small, per gross.	\$1.50	\$1.80
To Solder, per gross.	Small, per gross.	\$1.50	\$1.80
Patty Pans.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Plain, per gross.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Scalloped, per gross.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Deep Scalloped, per gross.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Oval.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Star.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Round Tea Pot Tops, Spun or Retinned, with Rimmed Covers.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Round Tea Pot Tops, Plain, with Rimmed Covers.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Round Tea Pot Tops, Plain, with Covers not Rim'd.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Rimmed Boiler Covers.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Flat-edged Boiler Covers.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Chamber Pail Breasts.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Chamber Pail Bottom.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Chamber Pail Covers.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Dust Pans, Plain or Japanned.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00
Wash Bowl Bottoms.			
Inch.	3 1/2	4 1/2	5 1/2
Per gross.	\$1.50	\$1.80	\$2.00

In our last issue we printed an extract from a Chicago paper to which the following letter is a reply. In our editorial columns will be found an article on the same subject, to which we invite attention:

PHILADELPHIA, Feb. 15, 1878.
To the Editor of The Iron Age.—DEAR SIR: In looking over your paper yesterday, I noticed an article taken from the Chicago Journal of Commerce, in reference to the withdrawal by Mr. John Nazro of all his "drummers." In the article the editor proceeds to describe the difference Mr. Nazro and his customers will find in dealing with each other. He (the editor), in common with many others, describes the "drummer" as a man totally devoid of all honor and decency in dealing with his fellow man, and appears to class all together. Now I hold there are many bad "drummers" as well as bad men of all classes, but I think that with "drummers" as with most other classes, the good ones outnumber the bad, and hardly think it just to make such a sweeping assertion as he makes. I must

say that I have had men come in to sell me goods whose word I would take as soon as the word of the head of the house they represented.

To look at this subject in another light and take for example the instance quoted. If Mr. Nazro's customers are all to come to his store to purchase their goods, I hardly think that he would have time to attend to them personally; if not, there is but one plan left him, which is to engage salesmen, and it is more than probable that he would engage men that he was acquainted with and that understood his stock, viz., some of his old "drummers." I must say that I do not see how the fact of these same men staying at home and selling the same goods to the same customers they sold to while traveling should make "the relations between merchant and merchant more safe, honorable and satisfactory," and remove the "craft, cunning, immorality and mendacity" of the "drummer."

I may be wrong in my ideas, but hardly think that I go further than to look at it from a point of justice. Yours respectfully,
BUYER.

We have received from Mr. S. H. Jennings, Deep River, Conn., a copy of his new book, entitled "Jennings's Combination Discount Tables," and after a careful examination we very cheerfully commend it to the trade, believing it will fill a want that hitherto has been unsupplied. The book contains 1500 tables for single and combination discounts, such as 35 per cent., 37 1/2 per cent., 25 and 5 per cent., 60 and 5 and 7 1/2 per cent., &c., which are so arranged as to be found without loss of time, and by their use either the discount or net, on any amount, from a penny to one million dollars, can be ascertained in a few seconds, entirely by addition.

By a novel arrangement of the tables they work equally well on either cents or dollars. Their principal uses are proving invoices received, making or proving bills of goods sold, and finding the net cost of separate articles on invoices of goods bought; but aside from this, the work being very comprehensive in its character, in fact covering the whole field of discounts, it must prove valuable as a book of reference when it is desired to compare different discounts, or to ascertain what results certain changes in prices would accomplish. We understand that it is highly spoken of by those who are using it, and we see no reason why it should not become a standard work for discount purposes so soon as its merits are known and appreciated. The publisher offers to send the book by mail, postpaid, to any address, on receipt of the price, \$3. This price seems moderate when the labor of compilation is considered, the quality of the paper, the printing, binding, &c., all of which show care and determination on the part of the author to furnish a book that should be accurate, and which with ordinary care will last a lifetime.

We have frequently had our attention called to the Hardware Board of Trade, Limited, of Nos. 4 and 6 Warren street, New York city, by the number of meetings of creditors which have convened at their rooms. This is an incorporated company, governed by a board of directors, and was organized in May last by a few leading merchants for the purpose of obtaining among themselves information of a reliable character as to the business standing and financial responsibility of some of their customers, and for the purpose of protecting each other from that class of dealers who make a practice of buying goods upon credit without the intention of paying for them. On inquiry as to the present state of this company we find that they now number nearly 100 members, composed of leading firms in New York, Pittsburgh, Philadelphia, and other cities, who exchange information among each other through the New York office, which issues daily sheets containing the names of all parties inquired about, as well as such items of interest to the trade as protests, failures, &c., &c. A record of these reports is kept at the office, and they have accumulated to an immense number already, and are of much value to the trade, being fresh and reliable. Finding a great necessity for it, the board during the month of December last organized a bureau of collections for the use of its members. A notable feature in this department is a class of collections where the board notify delinquent debtors of claims placed in their hands for collection, giving them a certain number of days in which to pay up. The debtor, finding that his credit is likely to be sadly impaired by not giving attention to the notice from the board, generally responds promptly. The charges upon this class of collections are only 1 per cent. upon the first \$500 and half of 1 per cent. upon larger sums. As before stated, they have a large number of creditors' meetings at their rooms, it being found of great advantage to all to have a convenient place for this purpose, where the business can be carried on systematically and orderly and with all the means at hand for making searching and thorough investigation of an insolvent's affairs. It is claimed by the company that all of the hardware and kindred trades, jobbers as well as manufacturers, will find this the most expeditious as well as satisfactory method of having their credit interests looked after, the board having no outside business or money-making schemes to distract its attention from its legitimate business. The light annual subscription of \$50, makes it within the power of all to test its merits. The officers of the Hardware Board of Trade, Limited, are as follows: Geo. S. Corbin (of P. & F. Corbin), president; Geo. G. Moore (of

John P. Moore's Sons), secretary; U. T. Hungerford (of Wallace & Sons), treasurer; James H. Goldie (4 and 6 Warren street), actuary; Frederick G. Dow (145 Broadway), counsel.

BOARD OF DIRECTORS.
F. Wiebusch (of Wiebusch & Hilger Hardware Co.); U. T. Hungerford; George S. Corbin; George G. Moore; James E. Pope (of Thos. J. Pope & Bro.).

BRITISH IRON MARKET.
(Specially reported by cable for The Iron Age.)

WEDNESDAY, Feb. 20, 1878.
Scotch Pig.—The market is now steady, after fluctuating in both directions since last Wednesday, and there is a fair amount of business doing. The following are makers' prices:

Coltness No. 1, 6 1/2 @ 53/6
Glenarnock No. 1, 5 1/2 @ 53/6
Eglington No. 1, 5 1/2 @ 53/6

Manufactured Iron and Rails—Quiet.

IRON.
American Pig.—The market is without any special feature worthy of mention. There seems to be little desire on the part either of makers or consumers to operate beyond the requirements of the moment. So far as sales are concerned, we do not hear of a single transaction worthy of mention; in small parcels for prompt delivery a fair retail business has been done. We quote as before: Foundry No. 1, \$18 @ \$19; Foundry No. 2, \$17 @ \$18; Gray Forge, \$16 @ \$17.

Scotch Pig.—The demand for Scotch Iron continues to be very trifling. We hear of the sale here of 100 tons Coltness and in Baltimore of 400 tons, all on private terms. We quote as follows: Glenarnock, \$25; Eglington, \$23.50 @ \$24, and Coltness, \$26 @ \$26.50.

Rails.—In Steel Rails some inquiry is reported, which, it is thought, will result in business at an early day. Nothing has transpired in Iron Rails, and for both Steel and Iron the quotations are unaltered. We quote as before, from mill: Steel, \$43 @ \$44, and Iron, according to quality, terms of payment, &c., \$32 @ \$37.

Old Rails.—A resale of 3000 tons of Old Rails has been made during the week at \$21.50, time and interest, delivered in Philadelphia. We quote the market here, \$19 @ \$20.

Scrap.—In Scrap Iron nothing has transpired, and we quote, nominally, No. 1 Wrought, from yard, \$22 @ \$23.

METALS.
Copper.—Business in Copper has been confined to the sale of 200,000 pounds Lake Superior, at 17 1/2 @ 17 3/4, which is also the closing figure. We quote Baltimore, nominally, 17 1/2 @ 17 3/4. Nothing has been done in futures. On Saturday London cable Best Selected \$71, and Chili Bars \$65.10, showing no improvement; but yesterday the Wallaroo sale came off, 750 tons being sold at \$75.17/6 on an average, which is a better price than the above Saturday's quotation of English and Chilean led us to expect. From this we conclude either that Copper is since looking up on the strength of the more peaceful political aspect in Europe, or that fine Copper is in demand. Perhaps both these influences have combined. At all events, this result of the Wallaroo sale has made a favorable impression in this market, the belief now beginning to prevail that Copper has passed its darkest hour and that henceforth more cheerful times are in store for it. Our mail dates from England are to the 7th inst., when they write about Copper the following: "The low figures ruling at the Swansea ticketings brought about a reduction of £2 per ton, at which the feeling remains quiet." The manufacturers of Copper and Yellow Metal continue in moderate request at former prices. We quote New Sheathing Copper, 26¢; Braziers, 28¢, and Bolts, 28¢; Yellow Metal Sheathing, 20¢; Y. M. Bolts, 25¢, and English Yellow Metal Sheathing, 15 1/2¢ in bond.

Tin.—This metal remains in a stagnant position, and prices continue to soften. About 400 slabs Straits have been sold at 14 1/2¢, gold, on the spot, while parcels to arrive are offered at the same price, and 14¢, gold, is bid. We quote at the close, large lines, Straits, 14 1/2¢ @ 14 3/4¢; English Refined, 14 1/2¢, nominally; ditto Common, 14 1/2¢, nominally; and Banca, 17 1/2¢, all gold. Since our last report 600 slabs Straits have arrived here, and in addition to the heavy amounts afloat, shipments continue large, thus far in February about 4000 slabs having been added to our load. It should, however, be mentioned that in spite of these by no means cheerful facts, there is a feeling manifested to keep in the article; i. e., many parties who dispose of a lot on the spot to-day are turning round and replacing the same by a purchase to arrive. We receive the following by mail from England, dated 7th inst.: "Prices gradually dropped at beginning of January, showing a decline of £2.10/7 ton. A few transactions have been put through at 10/ under quotation, which is for Straits, £63.10/7, but these are rare, and the market has been steadier for the past week." Tin Plates.—The demand is moderate, but stocks are light, and it is supposed prices cannot go any lower. We quote, in gold, per box, ordinary brands, large lots, as follows: Charcoal Bright, \$6; ditto Termes, \$5.75 @ \$6; Coke Tin, \$5.35 @ \$5.50; and ditto Termes, \$5.25. They write from Liverpool, under date of Feb. 7, to the following effect: "Our quotations show reductions during the five weeks past, and there are but few makers who have a stock of orders to fill. All are willing sellers, and many will take reductions on their quotations. Through the competition of second-hand lots, Coke Tins are procurable of good common grade at 16/6 @ 16/9. There is no description that

can be said to be in active demand. As soon as peace is definitely settled there is sure to be an improved feeling."

Lead.—Sales for the week sum up 150 tons Common Domestic, in lots, at 3 1/2¢ @ 3 3/4¢, currency. We certainly hear of no sale lower than 3 1/2¢, currency, and 4¢, currency, for Refined. Producers and dealers are stirred into activity by the low price of the metal, and sample lots are being dispatched to China also from this coast, in hopes of gaining a foothold in that important market. Serious steps to create an outlet for our surplus production will naturally have a favorable effect here, if successful, on which subject we do not entertain the least doubt, and the inference is that we shall soon touch bottom, if we have not done so now. From England they write under date of 7th inst., as follows: "Smelters became firmer about the middle of the month, but have since become more willing sellers at 5/ off the highest obtained. A good soft quality can be had on the east coast at £18.10/7 ton. Manufactured is steady at the present low ruling. We quote: Bar, 6¢; Pipe, 6¢; Sheet, 6 1/2¢, and Tin-lined Lead Pipe, 15¢—all less 10¢ to the trade.

Spelter and Zinc.—Domestic Spelter remains decidedly dull, and we cannot quote the same any better than 5 1/2¢ @ 5 3/4¢, currency; we even have our doubts as to the saleability of larger lots of common brands at the inside figure. Foreign we quote 5 1/2¢ @ 6¢, gold, nominally. There is none here, nor any on the way. The European markets remain inanimate, though sustained. Sheet Zinc.—Sheet is inactive, and prices are lower. We quote: Mosselman, 7 1/2¢ @ 8¢, gold, and Domestic, 6 1/2¢ @ 7¢, currency, nominally.

Nickel is quiet at \$1.50 @ \$1.60, currency. Antimony.—London is stiffer (as per cable), and the "Cookson" brand cannot, we believe, be got below £52. Here the market is quiet, but firm, the latter at 12 1/2¢, gold, and Hallett at 12 1/4¢, gold.

COAL.
The coal trade this week presents no features whatever that are of interest. Prices remain unchanged, and it is even reported that they are growing firmer, but there are no signs of improvement in the market. The warm weather has a serious effect in curtailing the household consumption, although this is somewhat made up by the increased consumption of steamers. The amount of coal at tide water is still very large, and has its effect in demoralizing the trade. The companies, however, are attempting by a restriction of tonnage to neutralize the effect of this coal, but it is evidently having its effect, and it is even reported that there are signs of dissatisfaction in the combination. We do not, however, look for a speedy break. The combination seems abundantly able to keep up its organization for some time to come, and it will probably not show any signs of weakness until the competition for the summer and fall business begins.

EXPORTS
Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending Feb. 19, 1878.

The warm weather has a serious effect in curtailing the household consumption, although this is somewhat made up by the increased consumption of steamers. The amount of coal at tide water is still very large, and has its effect in demoralizing the trade. The companies, however, are attempting by a restriction of tonnage to neutralize the effect of this coal, but it is evidently proving its effect, and it is even reported that there are signs of dissatisfaction in the combination. We do not, however, look for a speedy break. The combination seems abundantly able to keep up its organization for some time to come, and it will probably not show any signs of weakness until the competition for the summer and fall business begins.

EXPORTS

Of Hardware, Iron, Machinery, Metals,

BALTIMORE.

Messrs. R. C. HOFFMAN & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of Feb. 18: Below we quote present prices for Pig Iron, with a fair demand and prices firmer, viz.:

Baltimore Charcoal Pig.....	\$22.00 @ 30.00
Virginia.....	28.00 @ 30.00
Anthracite No. 1.....	19.00 @ 20.00
" No. 2.....	18.00 @ 19.00
" No. 3.....	17.00 @ 18.00
Mottled and White.....	14.00 @ 15.00
Charcoal, C. B. Blooms.....	50.00 @ 55.00
Billets.....	55.00 @ 60.00
Refined Blooms.....	45.00 @ 50.00

Messrs. WYTH & BROTHER, Iron and Steel Merchants, 46 and 48 South Charles street, report us the following prices, under date of Feb. 19, 1878: There was a fair business doing in this market during the past week, and prices rule notably unchanged:

AMERICAN REFINED BAR IRONS.

8 to 6 wide by 3/4 to 1 thick.....	1.95 to 2.00
1 to 4 1/2 wide by 3/4 to 1 thick.....	1.95 to 2.00
Round and Square, ordinary sizes from 3/4 to 2 inclusive.....	1.95 to 2.00
Hoop iron, 1 1/2 wide and upward.....	3.00 to 3 1/2 c.
Band iron, from 1 1/2 to 2 1/2 wide.....	2 1/2 to 3 c.
Horse-shoe iron 3/4 to 1 wide by 3/4 to 1 thick.....	3 1/2 to 3 3/4 c.
Norway Nail Rods.....	5 1/2 to 6 c.
Squares and Octagons, ordinary sizes.....	14 1/2 to 15 c.
Machinery Steel.....	8 to 9 c.
Cast Spring Steel.....	7 1/2 to 8 c.
Homogeneous Steel Plate.....	8 1/2 to 9 c.
Perkins' Horse shoes, per keg of 100 lbs.....	\$4.00 to 5.00
Mule shoes.....	5.00 to 5.50
R. R. Spikes.....	2 1/2 to 2 3/4 c.
Common Horse Nails.....	per 100 to 18 c.
Putnam Horse Nails.....	per 100 to 21 c.
Globe Horse Nails.....	per 100 to 21 c.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., Feb. 4, 1878.

YOUR TARIFF BILL

It is at present of paramount importance to the manufacturers of Great Britain, and you very naturally know that its progress will be closely watched. The telegrams we have from your side inform us that the bill, as prepared by the Ways and Means Committee, proposes an average reduction of 20 per cent. on the present duties with certain exceptions of no particular interest to the iron trade; that it abolishes compound duties and changes ad valorem to specific duties "wherever practicable," and that it "admits steam agricultural machinery and ship building material free of duty." Further I need not go. You know as well as I do that it is in this clause that the hopes of the English manufacturers are centered. If that clause should pass I have little doubt of the way in which it will be made to operate. If it does pass I hope its phrasing will be made more definitive and precise, so as to save the endless quibbling that is certain to otherwise arise as to what is or what is not "ship building material." It is not for me to plunge in *medias res*, either on behalf of one side or the other, but I may at least tell you that this particular clause has excited the

MOST LIVELY HOPES,

not only in Sheffield, but in all the iron making districts. Need I repeat the severe manner in which "the slain have again been slaughtered" in the shape of denunciations of your "iniquitous" system of (self) protection? I think I need not, nor do I deem myself called upon to go out of my way for the purpose of reproducing the sympathy which a portion of the press, as well as the whole host of manufacturers, bestow upon the "long suffering" Western communities of your republic. Yet those who know most of your iron and steel trades have already ventured to prophesy that the bill as it stands cannot possibly pass Congress and that the "fond desires" it has excited are consequently all doomed to disappointment.

SUPPOSE THE BILL PASSES,

however, (merely for the sake of argument and illustration) what effect would it have in Canada and our own colonies? Would the successful competition of Great Britain and Germany in the United States so weaken your manufacturers that they would lose heart (and money) and retire from the vigorous competition which they have established in many parts of the world? or, would their enterprise be stimulated to greater efforts by the "crowding" of the foreign competition at home? These problems, I venture to think, are worthy of being thought out. Personally I am not

ONE OF THOSE

"Twaddlers," so termed, alluded to by Mr. William D. Marvel, of New York, in his letter of January 5 to *Seward's Coal Trade Journal*, who have written "so much in our American trade papers about the Decline and Decay of England." Mr. Marvel does not believe in "all this rubbish" about the "Decay of England," nor do I give credence to all I read on the subject. At the same time I venture to suppose that *The Iron Age* has not been guilty of these exaggerations, either in this correspondence or elsewhere, but has always dwelt upon the formidable nature of British competition—a competition the more redoubtable and firm by reason of the immense merchant navy of the nation.

THE ENGLISH CURRY COMB TRADE.

Says the *Ironmonger*: "American competition, favored by the heavy protective duties imposed on curry combs by the United States government, has succeeded in reducing to a very low ebb a once flourishing industry at Walsall and Willenhall, in South Staffordshire. Until within the last four or five years it was computed that in Willenhall alone upward of 50,000 curry combs were produced every week, comprising probably 300 distinct patterns, and ranging in price and quality from 1/10 to 10/ per dozen. Four years ago, so prosperous was the curry comb trade in Willenhall, and so much increased was the cost of production, that the

local factors and merchants were content to pay 45 per cent. premium on manufacturers' list. It was doubtless this great advance in prices which stimulated productive competition in the States—to which market three-fourths of all the curry combs made in South Staffordshire had hitherto been sent—and the makers around Pittsburgh had their efforts seconded by an imposition of import duties to a point which rendered them almost prohibitive, and which effectually enabled the American rivals of South Staffordshire to establish their position. How long the policy of protection in regard to curry combs will be maintained at its present level remains to be seen; but until some substantial reduction takes place, the trade on this side of the Atlantic is not likely to augment its present yield, which is about one-fifth of that in times of normal prosperity." I do not suppose I should be far from the mark if I were to add that something very similar has come about in the lock and screw trades.

THE LABOR MARKET

changes of the week have been so numerous that I am compelled to epitomize them thus: Richards, Thomas & Co., of Lydney Works, have notified reduced wages; the Worcester and Staffordshire nailers have received notices of a drop of 20 per cent. from the 1875 list; a conference of trade societies at Birmingham has passed resolutions strongly protesting against the "unpatriotic conduct of masters in importing foreign workmen;" at Consett Iron Works some men have been thrown idle by the blowing out of another blast furnace; on the Great Western Railway system the permanent way men's wages have been lowered 1/4 a week, and the working engineers, &c., in the locomotive and carriage shops at Swindon, Worcester, and Wolverhampton have been put upon five days' work weekly.

EARL GREY

has come forward as a peacemaker between the Northumberland coalmasters and their miners. He has written two or three letters on the subject, of great length and some cogency, and there is reason for hoping that his efforts may be rewarded with success. His lordship reminds the men that the masters would not close their pits without adequate cause, and states that he has information that vessels which had come to the Tyne for coals had been compelled to go to Cardiff, where they obtained coals at 1/6 to 1/8 ton under Tyne prices, and also found that to tons of the Cardiff coals were equal to 11 tons of the Tyne coals, so that thereby they naturally inclined to have the former again. As I write, I learn that overtures are again being made for an amicable settlement.

BOLCKOW, VAUGHAN & CO.

evidently believe in pacific measures, for they have just petitioned Parliament in the following terms: "The petition of Bolckow, Vaughan & Company, Limited, of Middlesbrough, in the county of York, iron and steel manufacturers and colliery and mine owners, humbly sheweth: That your petitioners are among the largest trading companies in Great Britain, having a subscribed capital of £3,650,000, employing 12,000 operatives, and paying upward of £1,000,000 a year in wages. That your petitioners have now for two years maintained a heavy struggle against the depressed state of trade. That they were hoping for, and believed they saw, indications of an early improvement. That war at such a moment as this will be a dreadful calamity to the leading interests of this country. Your petitioners, therefore, humbly pray your honorable House to urge upon the government that a strict neutrality may be maintained toward the war now being prosecuted by Russia and Turkey. And your petitioners will ever pray, &c., Benjamin Whitworth, M. P., Deputy Chairman."

Iron wonders what on earth the company mean by such a grand, eloquent petition, while the *Ironmonger* deems it not only fitting, but worthy of imitation. Personally, I don't think it matters at all. It is a good advertisement in any case.

THE BRITISH IRON TRADE

of 1877 has just been officially reviewed by Mr. Jeans, secretary of the British Iron Trade Association. I am sorry to say my own copy is not to hand at the time of writing. Iron, however, compares the production with the admirable yearly statistics of your Mr. J. M. Swank, to the great advantage of the latter, at the same time admitting that Mr. Jean's task has been made much more difficult by the absence of organized returns in this country. In Cleveland the returns are intelligible and definite, but in South Staffordshire, where there were 129 iron works, including 2009 puddling furnaces and 342 rolling mills, no returns are obtainable as to the output or selling prices. Mr. Jeans believes there are about 2600 puddling furnaces idle in various districts, and that the make of rails in South Wales last year was under 100,000 tons, as compared with 534,000 eight years ago, while in Cleveland last year only 36,750 tons of rails were produced, against 324,420 tons in 1873. This reduced production means, says Mr. Jeans, the discontinuance of about 1300 puddling furnaces and the labor of 13,000 puddlers and millmen. But ship plates increased by 40,000 tons; angles, 60,000 tons, and between 1868 and 1877 the number of Bessemer converters rose from 57 to 114, but the production has not been closely estimated. Taken on the whole, the first report of the association is not very satisfactory, owing to the want of co-operation among the manufacturers.

THE FINANCIAL EMBARRASMENTS

of the week have included a meeting of the creditors of John & Joseph Jenks, iron masters, Excelsior Works, Surethwick, their debts being £4000. At Carlisle, Mr. Samuel Blaylock, trading as "J. D. & H. Watson & Co.," has filed a liquidation petition, his debts being £26,500. The North Kent Bank, with branches at Greenwich and Blackheath, has suspended payment, but no estimate of the liabilities has been published. Mr. W. H. Watson, corn factor, of Leeds and Mirfield, has filed a petition, owing £40,000. In the London Court of Bankruptcy a meeting was held last week of Newton Wilson, a well-known sewing machine manufacturer, who

had seventeen different establishments in as many large towns of the United Kingdom, and whose debts were estimated at £25,000.

MR. HENRY BESSEMER

has just been awarded the first Howard Quinquennial Prize, for his well-known invention of "a new and valuable process relating to the uses and properties of iron," from the Institution of Civil Engineers. Writing on

TRADE PROSPECTS

to the *Sheffield Telegraph*, a correspondent signing himself a "London Merchant," discourses in the following serious strain: "It is distressing to the public generally to read in the papers that great distress exists in Sheffield; and I, like many others, deeply sympathize with the innocent sufferers that are affected by such a state of things. Though not a resident at Sheffield, I am indirectly associated with it; and if what I am about to say reads somewhat harshly to those who are assisting to alleviate the present trouble, I trust they will not conclude that I underestimate their charity and good intentions.

"Some one must speak out, however. The fact is, there is a large trade doing, but it is no longer done by Sheffield. The tool trade is done by the Americans, and with greater success in many tools, both as regards price and finish of their goods. Consult any colonial merchant you like, and you will find that it is now quite an exception to find Sheffield tools; in fact, such goods go direct from New York to their destination without touching any English port. So much for one item.

"Another article of Sheffield manufacture is wire. As large a business is done as ever, but it is being done by the Germans and Belgians, and at prices varying from 10% to 25% less than the cheapest English maker. The lowest price at which No. 8 annealed drawn fencing wire can be sold by an English maker, free on board in London, is £10. 15/ per ton, whereas any quantity can be bought from Germany, delivered in the Thames, at £9. 5/ per ton, and the difference becomes greater as the sizes become finer.

"There was a time when Sheffield and Birmingham supplied London wire rope makers and mesh netting makers with wire; now this trade is being done exclusively by the Germans.

"Take another item—Nail rods. There are five ships now on at Antwerp, chartered by English merchants, and being freighted with Belgian goods, going direct to China and Japan. Each of these vessels will carry hundreds of tons of nail rods at prices varying from 20/ to 30/ per ton under the English prices, free on board in the Thames. Belgium has long been doing the glass trade; and Belgian girders, as is well known, are now generally used.

"I have only referred to a few branches of business of which I am able to speak from personal experience. I have no doubt Manchester would tell a similar story, but I have said enough for my purpose. It is to show that, apart from special and peculiar exceptions, there is no just reason, although good cause, for the present distress. There is plenty of trade doing, but if Sheffield men will not work except at prices that will not let Sheffield compete, then it is Sheffield's fault, and not the world's if the trade goes elsewhere. And when will it come back? Possibly not at all, and certainly not till English workmen will work as cheaply and live as temperately as their Continental competitors. I have referred to Sheffield for the reasons named in the commencement of my letters, but the question is also a national one, for our commercial position is fast on the wane, and though I am a buyer, and hence not financially a sufferer, I feel the state of things severely as a lover of my country, and regret with sorrow its present humiliation."

THE CROWN PRINCE

of Austria has visited Leeds, Bradford, Sheffield and Birmingham during the past week, and in each town has been shown some of the lions. While here he went through the Atlas Works of John Brown & Co., and seemed a good deal interested in the armor plates which were being made for his own government; at Birmingham he went through Elkington's electro-plate works and the government small arms factory at Small Heath.

SCOTCH PIG IRON

has become firmer during the week, in part owing to the changes in your tariff, and partly by reason of the seeming probability of the end of the war. Despite these facts, however, 416 tons of pig have been added to Connal's stores, making the total now held there 179,687 tons. There are 87 Scotch furnaces now in blast, as against 118 last year. Writing on February 1, Messrs. James Watson & Co., Glasgow, said: Since the date of our last circular the price of warrants has advanced, and the market closes to-day very strong. On Monday the price advanced from 51/2 1/2 to 51/4 1/2, closing quieter at 51/3. On Tuesday the market was easier at 51/3 1/2 to 51/2 per ton. On Wednesday business was done at 51/3, cash, and 51/5, one month. Yesterday the market opened steady at 51/3, cash, but improved to 51/4 1/2 per ton. To-day there has been some excitement, and a large business was done from 51/5 to 51/9, cash, and 51/8 to 51/11, one month, closing sellers at the higher figures, buyers offering a half-penny per ton loss. The probability of a reduction in the American tariff and the prospect of the armistice being agreed upon have tended to impart confidence. Makers' iron is very firm in price, and in several instances they decline to quote. Shipments last week were 6170 tons, against 6040 tons in the corresponding week of 1877. We quote:

G. M. B., at Glasgow.....	No. 1.	No. 2.
Gartsherrie, ".....	52/6	50/6
Coltness, ".....	52/6	50/6
Summerlee, ".....	52/6	50/6
Langloan, ".....	52/6	50/6
Carbidge, ".....	52/6	50/6
Calder, at Port Dundas.....	52/6	50/6
Glasgow, at Ardrossan.....	52/6	50/6
Edginton, ".....	52/6	50/6
Dalmellington, ".....	52/6	50/6
Shotts, at Leith.....	52/6	50/6
Knott, at Bo'ness.....	52/6	50/6

Messrs. Wm. Colvin & Co.'s and Messrs. John E. Swan & Bros.' quotations are similar to the above.

At the Carnbroe (Merry & Cunningham), Drumpeller (Henderson & Dimmick), Moss End (Messrs. Neilson), Calder (Messrs. Dixon), and other iron works notices have been issued intimating reductions of all the workmen's wages.

LAST WEEK'S SHIPMENTS

from the Clyde included locomotives worth £14,000 and railway sleepers worth £7991 for Bombay; pipes to the value of £22,166 for Rio de Janeiro; machinery, £5369; castings, £3600; tubes, &c., £511, and £4000 miscellaneous to various destinations.

IN THE NORTH OF ENGLAND

no great amount of business is being done, although some firms are said to have as much as £100,000 worth of pig on hand. Bolckow, Vaughan & Co. have turned out 10,000 tons of steel rails since they started in October last, and are now producing 850 tons weekly. The Weardale Iron Company's Bessemer works have now been restarted. A correspondent states that the exact production of Cleveland ironstone produced during 1877 was 6,252,314 tons, as compared with 6,562,000 tons in 1876. The most productive mine in 1877 was that of Uptham, belonging to Messrs. Pease, which yielded 613,744 tons, as compared with 662,200 tons in 1876. After this mine comes Lofthouse, belonging to the same firm, which yielded in 1877, 605,244 tons, as compared with 562,459 tons in 1876. The next largest yield was 529,477 tons, obtained from Easton, as compared with 581,978 tons in 1876. The greatest falling off has been at the Skelton mine, which only produced 20,549 tons in 1877, as against 136,448 tons in 1876; at the Belmont mine, which only yielded 57,301 tons, as compared with 117,600 tons in 1876; and at the North Loftus mine, which put out only 50,665 tons, as against 127,905 in 1876. At the annual meeting the other day of the North of England Board of Arbitration, it was reported that there were 20 works connected with the Board and 7272 subscribing members, or 800 fewer than a year ago. The standing committee in their report affirm their unshaken belief in arbitration as a "rational and equitable means of settling disputes in all trades between employers and operatives."

TRADES OF SHEFFIELD.

The transactions of the week in almost all kinds of raw and finished iron have been on a limited scale. The common brands of pig iron remain in poor request, and are therefore being offered in the open market at very low prices, both by agents and vendors, a fair quality of this class being quoted at £2 @ £2. 1/6 per ton f. o. r. At the same time it may be mentioned that good foundry pig is selling moderately well, not only on local orders, but on account of orders received from Staffordshire and other districts. Ordinary foundry brands realize 44/ for No. 1; 42/6, No. 2; 40/ for 41/; No. 3; and 40/ for No. 4. Better qualities command more money, several well-known Derbyshire makes being quoted at from 45/ to 50/ per ton at the works. Hematites are fairly steady, but owing to the increased competition which has recently been imported into this branch in Cleveland and other districts, vendors are not inclined to accept rather less money in the open market, much of their aggregate output, nevertheless, having been contracted for on regular deliveries during the last fortnight of the year. In this locality deliveries of these pigs are on a considerable scale, and at one or two of the Bessemer works there are heavy stocks on hand. This circumstance is no doubt attributable to the general belief that by the early conclusion of the war an immediate and great impulse would be given to the rail trade. In regard to the rail mills, I have nothing particular to record, save that I hear of an order for a home line of 10,000 tons having been placed at a price said to be very little over £6 per ton, and that other specifications, including one on Mexican account, are at present in the market. Most of the rail mills which have been mentioned in these reports several times lately continue to be fairly busy. The recent discussions as to the future development of the railway system in India have been received with great interest by the rail manufacturers, inasmuch as to carry out what has been indicated would require a very large tonnage, not only of rails, but of sleepers, &c., all of which could now be had on very easy terms. I believe, however, that I am correct in stating that these further commissions will not be given out at present, or until certain experiments and trials which the India office has now in hand have been definitely decided in one direction or another. I am not at liberty to state what these trials are, but I may say that they are of a kind calculated, if successful, to prove rather disappointing to the manufacturers of a certain class of railway requisites. Two leading home companies are understood to be moving in the same direction.

There is a fair demand for tires. A lately placed contract for these articles was a trifle over £10 per ton. Railway carriages and wagon springs are in different request, and a large number of the workmen in the trade are out of employment. Axles are generally quoted at about £11 10/ to £12 per ton, but I have been told of one or two recent instances in which less money has been accepted. There is a tolerably well upheld inquiry for steel ship-plates, which now seem to be in a fair way to very largely replace even charcoal plates of the highest reputation. At the present time several orders for these plates are being executed by local firms, some of whom have recently "laid themselves out" in a special way to secure the trade. In best boiler plates, frame plates, and other superior iron, a fairly good, but not very large business is being done at two or three of the iron works.

In the Leeds district matters are quiet, the forges being employed about three or four days weekly only. At Lowmoor, four days a week are being worked. The Leeds Forge Company have secured orders for ship-building iron for the Barrow Ship Building Company, and have also numerous commissions in hand for their locomotive fire boxes, constructed on Mr. Fox's principle, without stays, by means of corrugated plates. The same company have just made a flue on this principle for a special steamer for the use of the Prince of Wales on the Seine during

the Paris Exhibition. A Leeds firm is also stated to have secured an order for 15 locomotives from the Great Eastern Railway Company.

There is a very quiet demand for armor plates pending the result of the trials of the new compound plates. A further series of trials will be made in about a fortnight at Portsmouth with a couple of 9-inch plates sent by John Brown & Co., of this town. Charles Cammell & Co. are also getting three plates ready for the same trials, at which the projectiles—chilled Palliser shots weighing 250 pounds each—will be fired at a distance of 30 feet from a 12-ton 9-inch muzzle-loading rifled gun, with a charge of 50 pounds of pebble battering powder.

At the Thorncliffe Iron Works of Newton, Chambers & Co., the whole of the men engaged in the blast furnace departments have this week resumed work at a reduction of 13 1/2 per cent. The puddlers of the Northfield Iron Company, Rotherham, have now agreed to accept a reduction of 7 1/2 per cent. from their former wages, but the works cannot very well be reopened until next week. It is stated that at other works in the Rotherham district, puddlers' wages are about to be similarly lowered.

STAFFORDSHIRE AND BIRMINGHAM are not brisk in any respect, and only good iron is at all in request. At Walsall, Messrs. Harrison, Hopkins & Co. are putting down five sheet mills, besides the three they already own. Ordinary sheets are selling at £7. 17/6 down to £7. 5/, while better kinds range up to £9. Angles are £7. 5/ and plates, £8 @ £8. 10/. Common bars are as heretofore, £6 @ £6. 10/ for common and £8 @ £8. 10/ for better qualities. The annual meeting of the South Staffordshire Ironmasters' Association was held last week at Birmingham, under the presidency of Mr. J. P. Hunt. The report of the committee stated that the rate of puddlers' wages remained the same, viz., 8/3, from April, 1876, until Jan. 14, 1878, when puddlers' wages were lowered to 7/6, and millmen's wages by 7 1/2 %. At the termination of this gathering the blast furnace owners held a separate meeting, at which they resolved to make no alteration in the present rate of wages, production and prices. In hardware there is still a fair amount of business doing. Some of the nail rod and wire manufacturers have again lowered prices 5/ @ 10/ per ton, and the following articles are all reduced 5 @ 15 %: Patent butt hinges, heavy hinges, nails, rim and plate locks, sheet iron goods and wrought-iron hollowware—such as galvanized buckets, coal scoops and hods, water cans, washhand basins, milk pans and many classes of stamped wares. In brass tubing the competition is especially severe. In this connection I may say that the Wolverhampton tramway rails are not of Belgian manufacture, but are made by the Landore Siemens Company.

SOUTH WALES AND MONMOUTHSHIRE. In these localities there is no great change. This hardly ought to be the case, for it is stated that labor is only being paid at the rate of 2 1/2 per day, or 13/ a week. Steel rails are now quoted at £5. 15/. Last week's coal exports from Wales and Monmouthshire were over 100,000 tons. In the tin plate trade several works are being restarted, and a heavy business is being done. Last week 700 boxes were sent off to Marseilles. The Tin Plate Workers' and Wire Workers' Company announce an exhibition in June next. Particulars can be had from Mr. Jones, the secretary, 8 Buckingham street, Strand, London, W. C.

THE METAL MARKETS have again been quiet, with few oscillations of quotations.

Messrs. Von Dadelzen & North say: "Copper is steady, but not active. Small sales of G. O. B. Chili bars reported at £65. 15/ spot and forward; named brands, £66 up to £67, for best. Little or nothing doing in Australian; Wallaroo still quoted £75. 10/; Burra, £74; English tough, £69 @ £71; select, £71. 10/ to £72. 10/; strong sheets, £76 @ £77; braziers, £75. Tin has been quiet, but prices better; £64 was paid for both Straits and Australian, but the market has since receded to £63. 10/ on the spot, £63. 15/ @ £64 forward; the Banca sale averaged 38 1/2 d. (£65); English is steady, at £68 @ £69 for ingots, and £69 @ £70 for bars. Tin Plates continue to be offered at very low prices. Lead dull; £18. 12/6 @ £19 for English pig; soft Spanish, without silver, quoted £18. 10/ @ £18. 12/6. Spelter.—Some special brands sold at £19; ordinary obtainable at £18. 15/ @ £18. 17/6. Quicksilver, £7. 5/. Antimony.—£51 for English; £49 @ £50 for Australian."

The *Mining Journal* remarks: "Copper.—The course of this metal has been variable, and prices have been subject to rather wide fluctuations, as great a difference as 10/ per ton taking place during the short interval of two changes in one day, the receipt of the least unfavorable political intelligence producing an instantaneous effect upon the disposition of operators. The demand is partial, chiefly among speculators, consequently very unreliable and liable to a collapse at any moment. The transactions lately have been partly to cover 'bear' sales, and not from any general belief in the stability of the market or in the probable realization of higher prices. Tin.—The tendency has been toward easier rates, and buyers seem shy of buying more than enough to satisfy immediate requirements. The dealers are greatly discouraged at the large supplies coming forward, and are as much puzzled about the future prospects of this metal as they have ever been. There will be no reliable market until the cost of production is better ascertained and understood. The deliveries during the past month amount to 1592 tons, and the stock is 8263 tons. In Holland the deliveries of Banca and Billiton are 14,747 slabs and the stock 41,135 slabs."

LIVERPOOL PETROLEUM DELIVERIES. Liverpool petroleum report for the week: Petroleum.—Refined oil quiet, without change in value. Deliveries from stock in warehouse of refined petroleum and spirit for week ending Jan. 31, 1878:

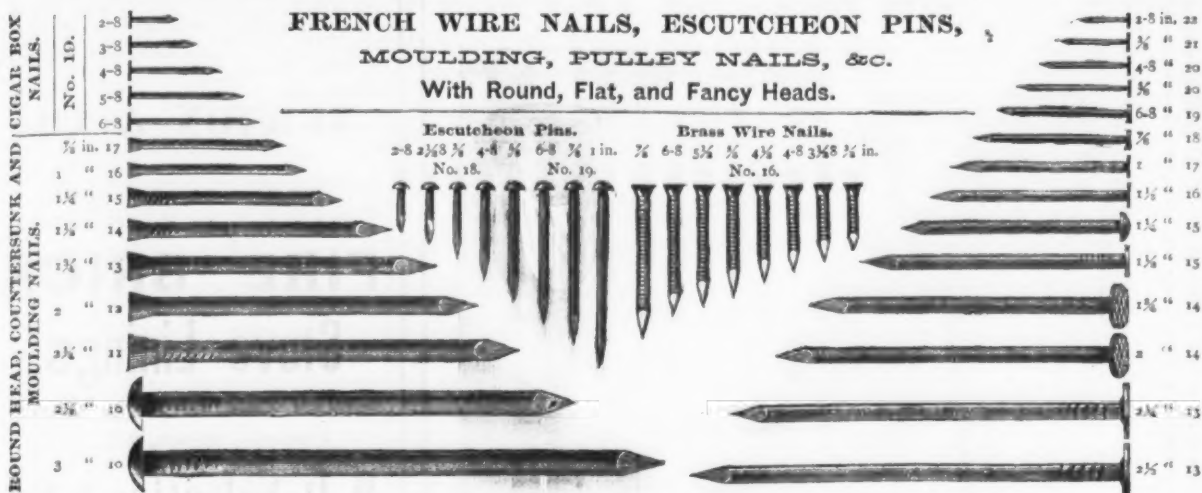
Deliveries.	Barrels.	Cases.	Stock.	Barrels.	Cases.
Refined Petroleum.....	1,941	14,806	295	1,941	295
Spirit.....	323	1,143	377	323	377

* In addition to the deliveries, 62 stows, 1544 barrels refined and 304 barrels spirit have been taken ex quay.

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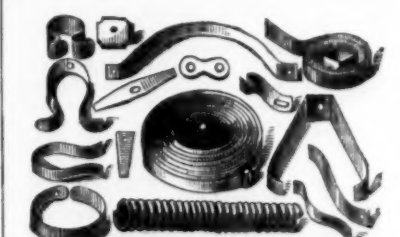
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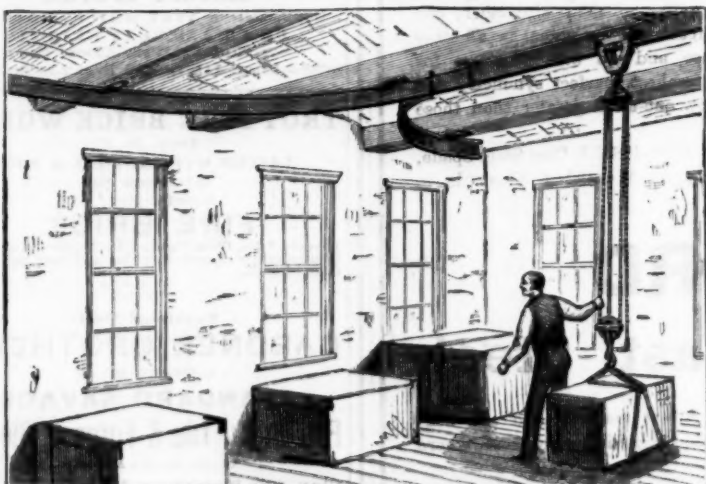
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FRANCE.

(Moniteur des Interests Matériels.)

PARIS, February 3, 1878.—*Metals*.—There is great apathy in business matters, and especially in the French metal markets, owing in part to the unsettled state of general European politics. *Copper*.—We quote, deliverable at Havre, Chili Bars, 175 francs the 100 kilos.; Common ditto, 172.50; Ingots and Slabs, 175; Best Selected English, 182.50; and pure Corocoro Ore, 180. There is no change at Havre, where they quote as follows: First brands Chili Bars, 172.75 @ 175; currenco ditto, 172.50; and Loti and Urmeneta, 170 @ 171.25. At Marseilles, Copper is firm, with a rising tendency; they quote Spanish in slabs, 165; Red Tokat, 165 @ 170; small Refined Ingots, 185; Sheathing, 205; Bolts, 210, and Yellow Metal Sheathing, 200. *Tin*.—The rapidly increasing quantities of tin from Australia are bringing down the various markets by degrees. We are gradually declining here, and quote Banca 185 francs the 100 kilos.; Billiton, 175; Straits and Australian, 172.50; and English, 175, showing a giving way of 2.50 francs during the week. Marseilles has been quiet, but steady; they quote Banca, 185; Straits, 177.50; Billiton, 177.50; and English Refined, 185. *Lead* is still remains unfavorably situated, the Continental markets sympathizing with the renewed weakness observable at London. Very little has been done here; the few transactions transpired have been at a uniform decline of 25¢ on all sorts. We quote French, Belgian and German, 48.25 francs the 100 kilos., and English and Spanish, 48. No sales are reported from Havre. There is no demand at Marseilles, and Lead is weak there at the following rates: First Fusion Soft, 46 @ 47; second Fusion, 45.75; Pipe and Sheet, 53; and Shot, 54. *Spelter* remains apathetic. We are inactive here, and in line downward. We quote Silesian, deliverable at Havre, 48.75; other good brands there, 48.75; and at Paris, 48.25. Havre is unaltered. Marseilles has on the whole been steady. They quote Vieille Montagne Sheet Zinc 67 francs the 100 kilos.; Southern ditto, 65; and old remelted, in slabs, 48 @ 49. *Iron*.—The situation is by no means a satisfactory one; prices are drooping in the French iron districts, and production is being curtailed in order to arrest the weakening tendency. Here in particular there has been quite a decline. Merchant iron having given way to 180 francs in store. In the Champagne mixed has declined 10 francs, now being quoted 185 francs. The forges there have reduced production 40%. At the North about the same state of affairs prevails.

BELGIUM.

(Revue Universelle.)

BRUSSELS, Feb. 3, 1878.—*Iron*.—The Belgian Monceau Iron Works have undertaken to furnish 1700 tons Steel Rails at Utrecht at 140.94 francs per ton. Our metal Exchange has been well attended, and there was a good deal of animation, which, however, seems to have been productive of but little business of a remunerative nature. Our manufacturers have to accept such low prices that they are compelled to listen to bargains only in replenishing their supplies of the raw material. Russia has again bought 10 locomotives for the Harlow-Nieuw-Bedway. According to the official statistics just published, there have been imported into this country during the first 11 months of the year 1877, 708,000 tons of Iron Ore and Scrap, against 622,000 in 1876 and 764,000 in 1875. Of Pig iron the import has been 102,500 tons, against 126,000 and 131,000 in 1876 and 1875. Of Iron Wire, Rails, Sheet Iron, Chains, Nails and other manufactures of iron we imported 12,500 tons, against 13,000 and 14,000. Our export, on the other hand, has been the following during the same period: Ore, &c., 194,000 tons, against 150,000 and 133,000; Pig Iron and Scrap, 11,000 tons, against 9000 and 14,000; manufactures as above enumerated, 75,000, against 81,000 and 80,000. Coal.—There has been but comparatively little done during the week in the Belgian coal regions, and prices have been characterized by extreme irregularity, varying between the various localities from 1 @ 2 francs per ton.

GERMANY.

(Borrenthal.)

HAMBURG, Feb. 2, 1878.—*Metals*.—There has been a dragging sort of business during the week notwithstanding the comparative ease in money matters. This is in a measure attributable to the disquieting state of general European politics. *Copper*.—The German markets have been extremely quiet without any notable change in prices. At Berlin good quality English and Australian fluctuates between 77.50 and 77.50 marks the 50 kilos., and Mansfield between 77.50 and 77.50. Our own market and Stettin are quiet and unaltered. *Tin* has been excessively quiet, and great weakness prevails. Berlin quotes Banca, nominally, 73.75 @ 74 marks the 50 kilos. We are unchanged here. Stettin is unaltered. *Lead*.—Our markets are paralyzed. Berlin quotes Tarnowitz, Hartz and Saxonian, 19 @ 19.50 marks the 50 kilos.; no change either here or at Stettin. *Spelter*.—Is lacking animation, and but trifling sales are reported. Good quality Silesian is worth 29.50 @ 30 marks at Berlin. Breslau is nominal. Hamburg and Stettin unaltered.

HOLLAND.

(Koch & Vierboom.)

ROTTERDAM, Feb. 3, 1878.—*Tin*.—At the Netherland Trading Society's sale, which came off on the 30th ult., 18,106 slabs Banca Tin were sold at an average of 40.35 guilders the 50 kilos., and 3264 slabs Billiton at 38.50. Since then there are buyers of Banca at 40 guilders, and Billiton has sold since at 38.75 on the spot, and 38.50 to arrive. There will be sold at Batavia on the 15th inst. about 10,000 piculs Billiton Tin at public auction.

EAST INDIES.

(Giffins, Wood & Co.)

SINGAPORE, Jan. 3, 1878.—*Tin* has given way in sympathy with London, and the last supply from Malacca sold at 18.80 per picul, at which the market is now firmer. The following are the exports for twelve months from the Straits Settlements to the United States: 1877, 68,714 piculs; 1876, 52,677; 1875, 61,277; 1874, 45,740; 1873, 37,758; 1872, 61,353; 1871, 49,868; and 1870, 60,304. *Gunpowder* has full supply, and rates are as last quoted. The Alice Reed is still loading for New York, and finds difficulty in filling up. For Boston the Templar has been laid on the berth. *Exchange* advanced to 4 1/4%, but is weaker at the close at 4 1/4% for six months' credit drafts.

From the Sharon Herald of the 15th inst. we clip the following: The works in Sharon keep up their good reputation for steady running. At the Western Mill, puddle and guide mills double; hoop mill double a portion of the week; sheet and bar mills single; nail factory on three days. The chain factory is making chains and shipping them about as fast as made. Both blast furnaces are working smoothly and steadily, keeping up their well-earned reputation in all respects. At the Kimberly Mill, all smooth as a ribbon. Everything double-turn. Nail factory off three days. Both mills shut down Friday night to let the employees take part in the Pittsburgh affair, which they did to the number of 250. Keel Ridge Furnace working as usual. At the Stewart Works, bloom mill off since Wednesday, on account of the packing giving out in the cylinder that works the tilt hammer. On again Monday of present week. Blast furnace No. 2 still keeping near the mark in quantity and quality. No. 1 is about finished at last; she will be a trifle larger than last blast—seven feet hearth and 13 feet in the bores, closed front bell top, five tuyeres; nothing added to the height; a well 21 inches deep, below the bottom of the iron notch, running down with a slope of about two inches to every course of brick. This makes the second of that style in this valley—Spearman No. 1, in Sharpsville, being the first. It is thought that it will cause a more uniform heat on the bottom of the crucible, by a mass of liquid iron remaining constantly on it. There is also an

extra support for the bell and hopper. Some trouble was caused during former blasts by the bell and hopper sinking; but now eight bars of railroad iron, each four feet nine inches, are screwed on the jacket, running up with a slight curvature, bracing against the ring of the hopper, causing a portion of the weight to rest on the jacket, taking that much of it off the lining.

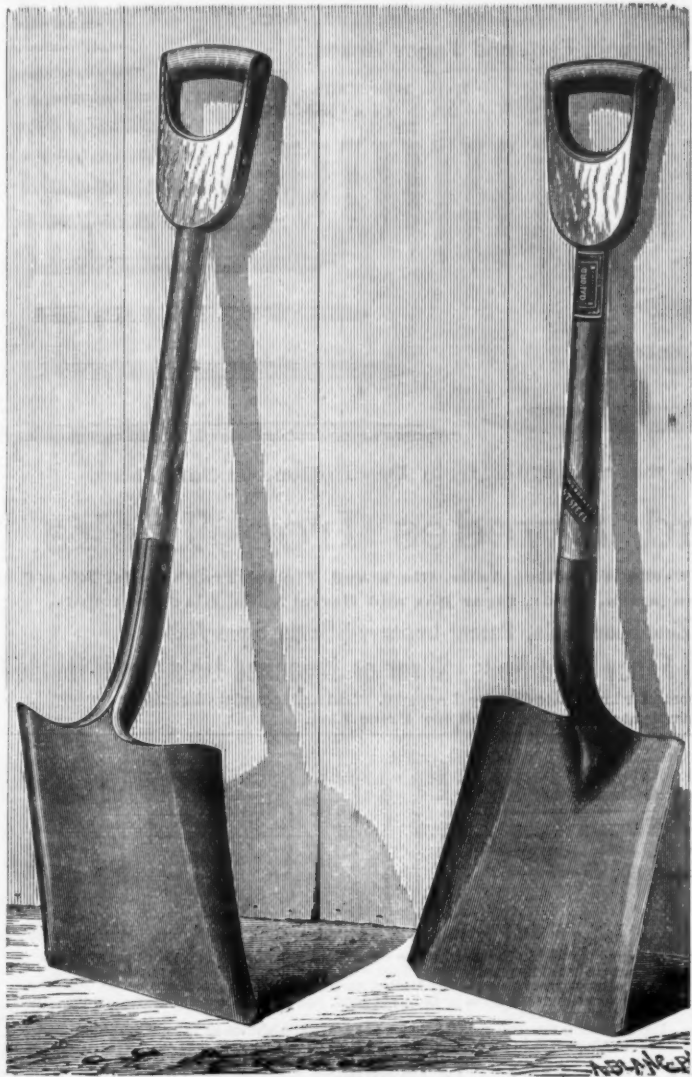
Americans Dredging a Government Ship Canal in Russia.

Mr. Levi Hayden, for several years past superintendent of the Morris & Cummings Dredging Co., of this city, has started for St. Petersburg, Russia, to commence, for the company he represents, the construction of machines and scows preparatory to dredging a great sea canal through the lagoon which separates Cronstadt, the chief naval depot of the empire, from the national capital. This important work is under a contract with the Russian government, whose commissioners at the Centennial observed the American methods of dredging, and now adopt them in a public improvement which may have no ordinary political and commercial significance. The contract requires that excavation shall commence by the first of October next, and the entire work be finished in 1883, though it is not possible to operate the machines more than six months in the year on account of ice. The sum of \$25,000 in gold has already been deposited in St. Petersburg by the contractors, as a pledge of good faith. The width of the canal is 280 feet, depth 20 feet, length about 10 miles. A leading feature of the improvement is the building of a "commercial port" near St. Petersburg (with a central basin, while the whole is environed by smaller basins for smaller craft), whence a line of railroad and parallel canal will extend to the river Neva, intersecting in their course all the great lines of railways connecting St. Petersburg with the south, the whole forming a single system of internal communication, which is regarded as showing extraordinary sagacity in its conception. One Pooteleoff by name takes all the honor. When all is finished, naval vessels can easily pass from the sea almost to the suburbs of St. Petersburg; barges from either the Volga or Neva can at the same time pass down to Cronstadt, and all the railroads have increased facilities for moving their freight. The engines and some of the machinery to be employed will be built in the United States. The contract as it now stands is for the removal of 3,750,000 cubic yards of mud, but the total is likely to be increased to 7,500,000 yards. The dredges are called the "clam-shell dredge," like those frequently seen at work in the New York docks, being armed with powerful iron jaws which close upon each other when filled.

Loss from Heated Bearings.—In a paper read before the Manchester Mechanical Society, by Mr. W. H. Bailey, on "Lubricants," he gave an idea of the waste from heated bearings. He said that when friction was produced heat was lost, and all energy thus wasted passed away in that heat which might be measured and valued with nearly as much facility as any article of commerce. From this knowledge they might gather, when they applied it to workshop economy, that if a pedestal or bearing became so hot through friction as to cause one pound of water to be raised 1° Fahr. in temperature in one minute, heat had been lost equal to that which would be caused by a weight of one pound falling through a space of 772 feet, or heat had been lost which would lift one pound weight 772 feet; if they applied those illustrations still further, and imagined 41 pedestals or bearings losing heat by friction in a similar manner, they might inform themselves that they were losing one horsepower, and if they knew from their books what their coal cost it would take very little trouble to give them the exact cash value of the friction and destructive action. The maximum of pressure that solid lubricants would bear without destruction was unknown. For steel surfaces, lubricated with best sperm oil moving slowly, 1200 pounds pressure per square inch of bearing surface has been found permissible. Under the pivots of swinging bridges several thousand pounds per square inch had been found to work; for iron journals 800 pounds per square inch should not be exceeded. He said that the oil which allowed the greatest heat to accumulate with the fewest revolutions must be a bad lubricant.

At a recent meeting of the London Statistical Society a paper was read by Mr. Robert Giffen on "Recent Accumulations of Capital in the United Kingdom." It appeared that the growth of those accumulations had been very rapid. The Income Tax returns showed that the gross income assessed rose in Great Britain from £115,000,000 at the beginning of the century to £130,000,000 in 1815, £251,000,000 in 1843, and £262,000,000 in 1853; and then, in the United Kingdom, from £308,000,000 1855 to £396,000,000 in 1865, and £571,000,000 in 1875. If the capital of that portion of the income derived from capital had only progressed at the same rate, the annual increase of capital all through, and especially of recent years, must have been enormous. The increase in the income assessed between 1865 and 1875 amounted to £175,000,000, which was equal to 44 per cent. of the income assessed in 1865. Leaving out altogether the capital not yielding income, a similar increase of capital, assuming the present amount to be what he had stated, would give us for 1865 a total capital of about £5,200,000,000, on which the increase at 44 per cent. would be £2,288,000,000; or, in round figures, £230,000,000 per annum. Mr. Giffen observed that if his estimate was moderate, and any cause would justify a higher figure for the present capital, then the increase between 1865 and 1875 would be even more than he had stated. A question which had been raised of late was whether the nation was now spending its capital. The figures in his paper might, he thought, be taken to prove that if the nation had begun to spend its capital instead of saving capital, the process was a very new one.

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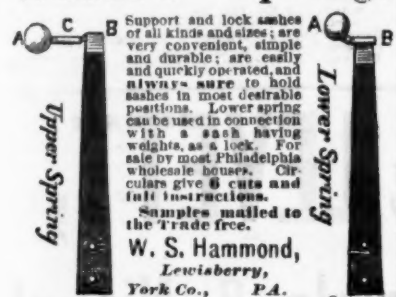
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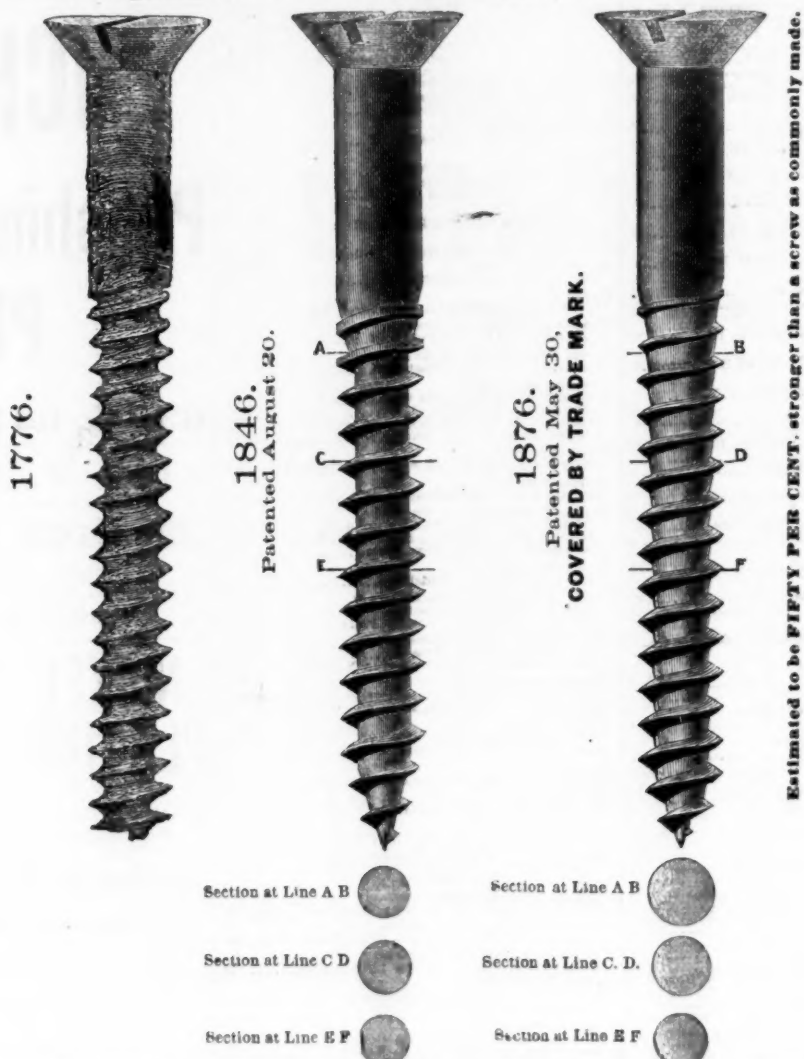
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The method of manufacturing is also patented, and we are changing our
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The new screws will be packed in manila colored boxes with new label covering
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To distinguish this screw we have adopted a trade mark, which is also secured to us.



Estimated to be FIFTY PER CENT. stronger than a screw as commonly made.

The above drawings show the progress of making screw from the old blunt
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To avoid the sharp angle existing in the old style of screws has been the aim of
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It will be seen in our new screw that not only is the sharp angle avoided, but
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"A Pointed Wood Screw having the outer periphery of the thread upon its body
cylindrical, while a portion of the body below the thread and near the neck is conical,
the remainder of the body to the point being cylindrical, and yet having all the thread
brought to an edge of a constant angle, without jogs in the paths between the threads,
substantially as described."

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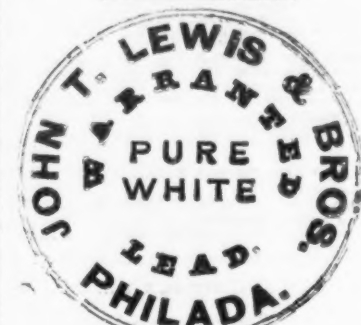


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taken out when renewal is necessary. It has a rubber
center, rectangular in form, covered with a series of
braids of linen, between which is placed a lubricative
compound superior to anything ever before used, for
the purpose, and contains nothing that can in any
manner cut, flut, or gum the rods, no matter how
long run. It has thus far received the highest praise
of every engineer who has used it, and we have re-
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Mills, Factories, Iron Works, &c., that it is the most
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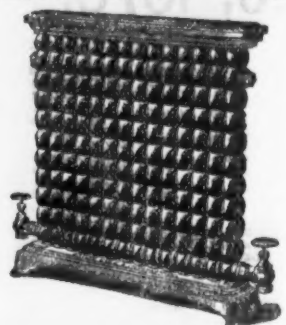
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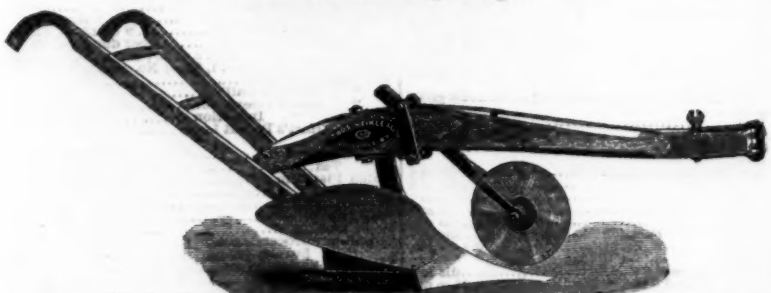
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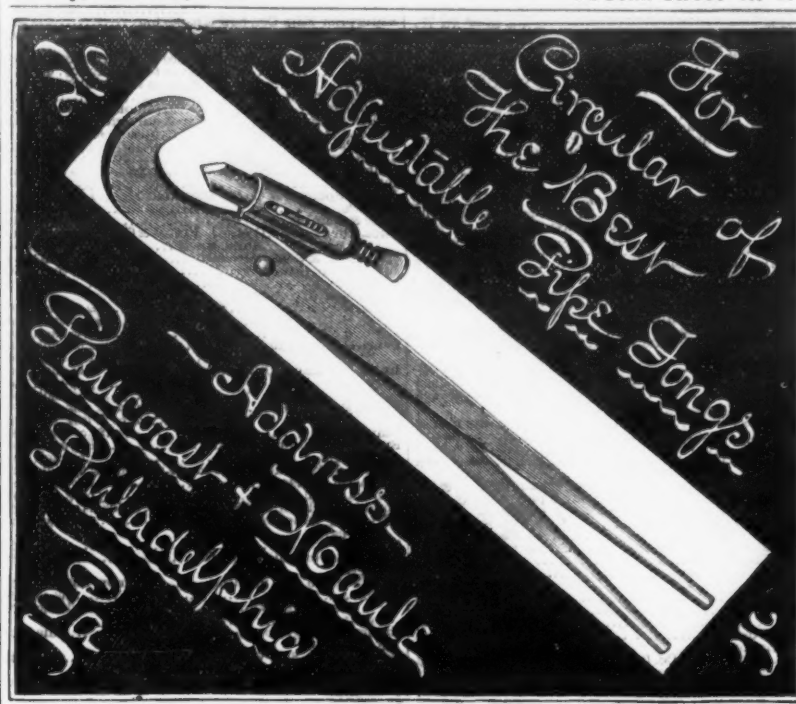
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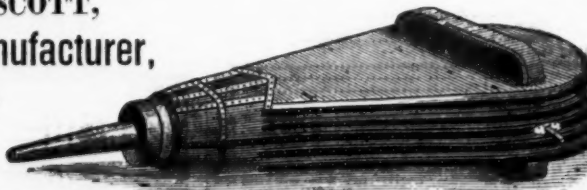
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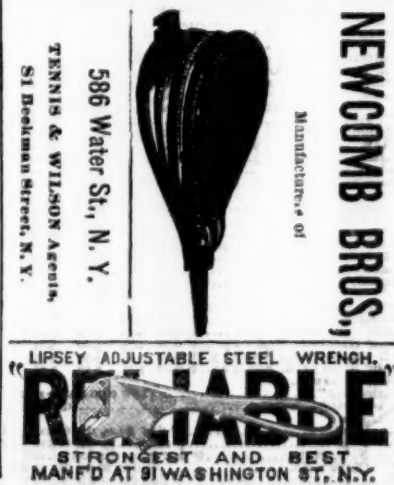
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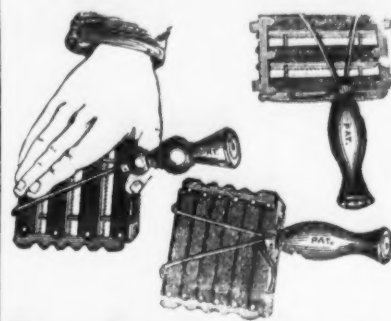
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viz: a rest and brace for the thumb, in such a position
that the hand cannot come in contact with the horse
while using the comb. The wire braces which run from
the shank over the back to the front teeth give strength
and durability in a direction never heretofore attained,
and at the same time serve as an extra handle; and
when clasped by the fingers in connection with the raised
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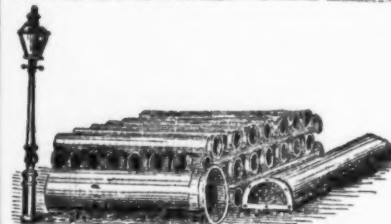
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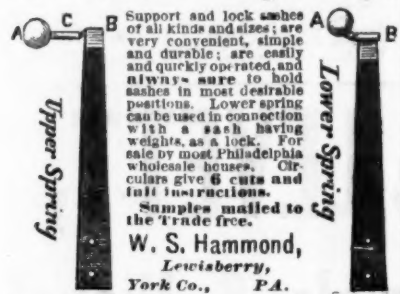
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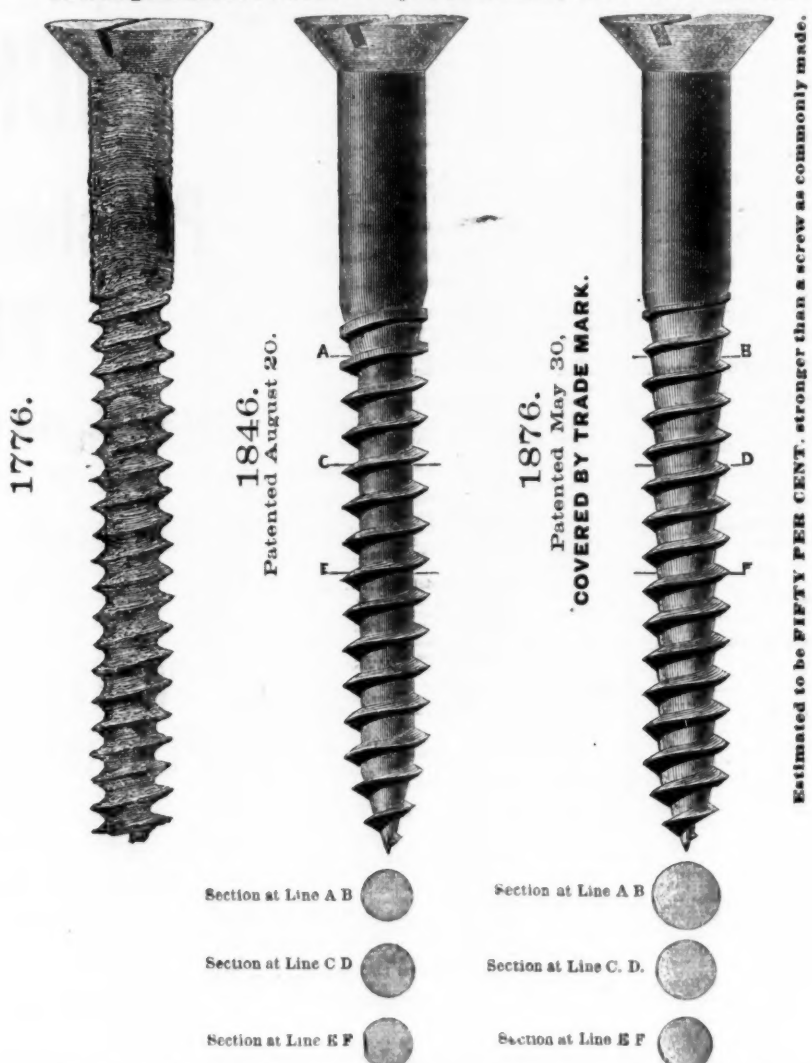
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To distinguish this screw we have adopted a trade mark, which is also secured to us.



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CLAIM.

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cylindrical, while a portion of the body below the thread and near the neck is conical,
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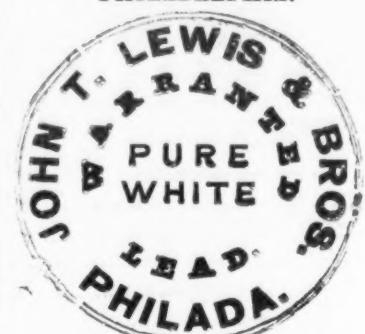
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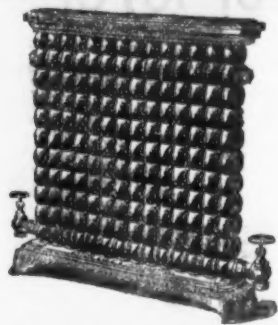
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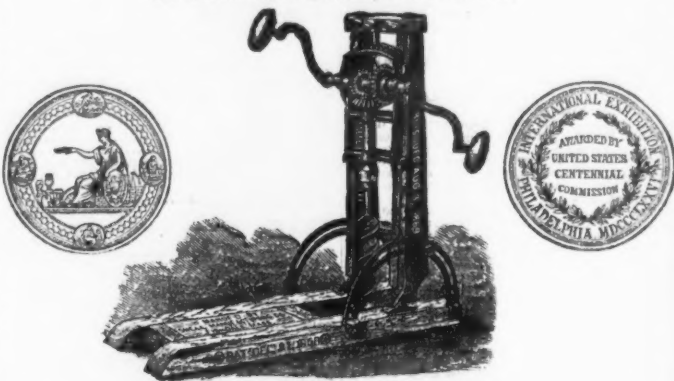
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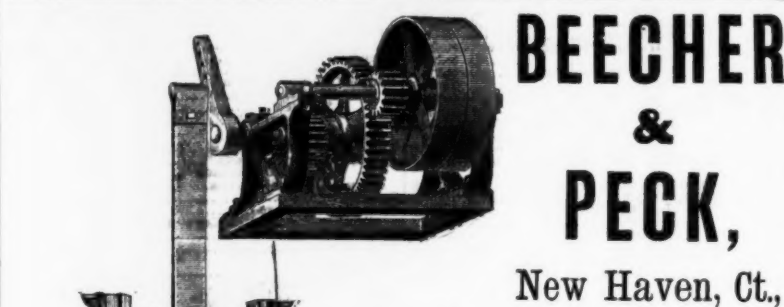
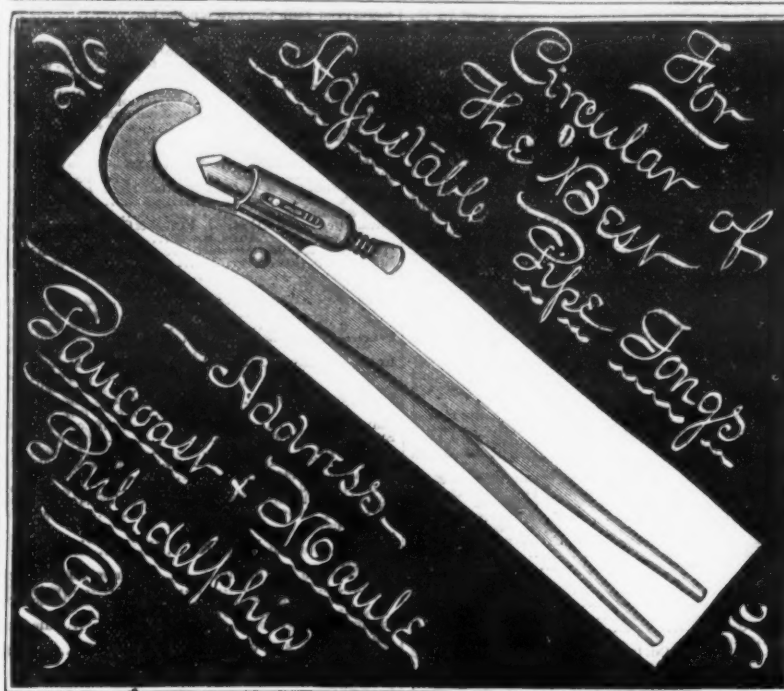
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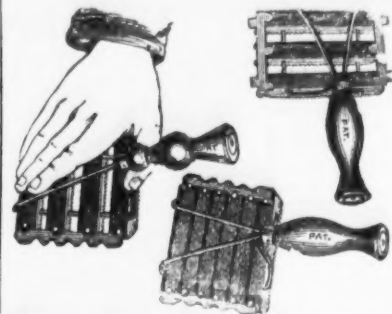
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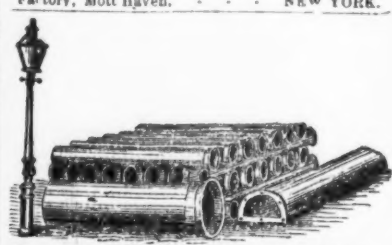
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22 X 52 to 30 X 50.....	16.00	15.00	14.25	13.75
24 X 50 to 34 X 50.....	17.25	16.50	15.75	15.25
26 X 52 to 34 X 50.....	18.25	17.25	16.50	16.00
28 X 50 to 40 X 60.....	20.75	19.75	19.00	18.50

Double Thick.—Discount 60c to 75c.

SIZES.	1st.	2d.	3d.	4th.
6 X 8 to 10 X 15.....	12.00	11.00	10.00	9.10
8 X 14 to 10 X 24.....	13.75	12.50	11.75	10.50
10 X 22 to 20 X 30.....	17.25	15.75	14.00	12.75
12 X 30 to 24 X 36.....	19.75	17.25	15.50	14.25
14 X 36 to 24 X 36.....	21.00	18.25	16.75	15.25
16 X 36 to 24 X 44.....	23.25	20.50	18.75	17.25
18 X 40 to 30 X 50.....	24.00	20.50	18.00	16.50
20 X 52 to 30 X 50.....	25.75	22.25	19.25	17.75
22 X 50 to 34 X 50.....	27.75	25.00	21.75	20.25
24 X 52 to 34 X 50.....	29.25	27.75	24.00	22.50
26 X 50 to 40 X 60.....	33.25	30.00	27.75	26.25

Sizes above 40 X 50—\$10.00 per box extra for every
 five inches.
 All sizes additional 10 per cent. will be charged for all
 sizes more than 40 inches wide. All sizes above 32
 inches in length, and not making more than 32 united
 inches, will be charged in the 5 united inches bracket

IRON & CO.,
 N. Y.,
 AND DEALERS IN
IRON & Nails,
Shoes, Screws, &c.
SPECIALTIES.
 Horse Nails, National Horse Nails
 Horse Nails.
 Shoes, Providence Horse Shoes.
ANVILS AND VISES.
 full Assortment.
 "ROYAL WOOD CHOPPER."
 Auger, Coil and Log Chains.
 WORK to order.

LIBERAL SCALES

	Without Scoops.	With Scoops.
2 lb. per doz.	\$48 ⁰⁰	\$52 ⁵⁰
24 " "	60 ⁰⁰	65 ⁵⁰
48 " "	72 ⁰⁰	78 ⁵⁰

Liberal Discount to the Trade.

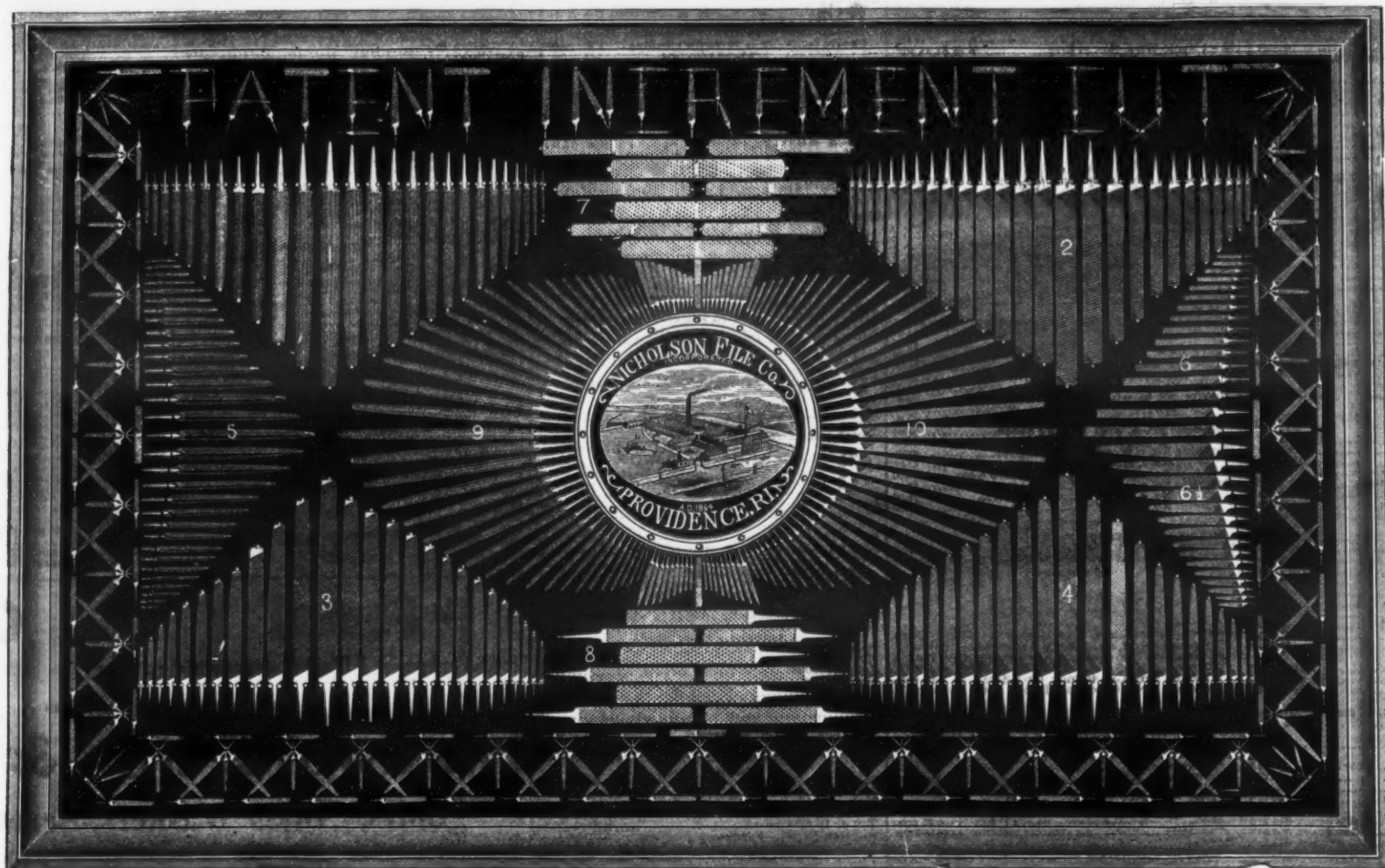
SPRAGUE'S
IRON OPENERS,
 in quantities.
EDGE & CO.,
 Trade St., New York.
SPARD & CO.,
 of
PAMPING WORKS.

BUFFALO, N.Y.
 BUFFALO, N.Y.

CANNED TIN WARE.
 Shovels, Spoons, Toilet Ware, Tin
 Rods, Iron Clad and Double Rim
 Cream Freezers, "Bankers,"
 "Transportation Cans"
 "Druggists" and
 Flu Ware.
 House Furnishing Hardware.

CO., Buffalo, N. Y.

NICHOLSON FILE COMPANY, Providence, R. I.



KEY.

1.—Half Round.
2.—Hand.

3.—Mill.
4.—Flat.

5.—Triangular.
6.—Pillar.

6½.—Knife.
7.—Plain Rasps.

8.—Tanged Rasps.
9.—Round.

10.—Square.
11.—Borders.

In addition to above we manufacture **FILES AND RASPS** of every description and kind known to the trade. These goods are not excelled, and by a large proportion of both Consumers and Dealers are admitted as superior to any either of Foreign or Domestic Manufacture. We are constantly improving and adding to our machinery, and by carrying a stock of from 30,000 to 50,000 dozen Files on our shelves at all times, we are enabled to fill orders with the utmost dispatch, thereby saving both loss of Trade and Interest to our customers.

For several months past we have been engaged upon a Catalogue and Treatise, illustrative of the File and its Uses, which we hope soon to have ready for distribution. In this work we expect to introduce several new and important appliances connected with the uses of the File.

MORTON Oil Pump.
The only absolutely **SAFE OILER.**

By the simple pressure on the valve, the oil is delivered in the exact quantity desired (from one drop to a spoonful), exactly on the bearing, with no possibility of clogging. In ordinary factories the saving will pay for the Oiler in sixty days. Send for circular.

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Biddeford, Me.

THE "OLD RELIABLE" UNIVERSAL WRINGER.

Improved with Rowell's double cog-wheels on both ends of each roll.
OVER 500,000 SOLD!
And now in use, giving "Universal" satisfaction. EVERY WRINGER WARRANTED. Sold by dealers generally.

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32 Cortlandt St., New York.

CLOTHES WRINGER!

"EUREKA" WRINGER.
BOSTON.

T. J. ALEXANDER, Manager,
BOSTON, MASS.

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Established 1843. Manufacturers of FIRST QUALITY

SPRINGS & AXLES

And Beer's Patent Curtain Rollers, Concealed Hinges, Etc., Springs of any pattern made to order. Send for Circular and Price List.

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ESTABLISHED IN 1862.

Hammered & Finished Horse Nails.

We offer our Finished Nail to the trade with the confidence that it has no equal in the market. It is the genuine "Northwestern" Nail, Finished, and we give it our unqualified guaranty.

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A. W. KINGSLAND, Secretary.

Our agents, Graham & Haines, 113 Chambers Street, New York, carry a full line of our goods, and will be pleased to serve you at Factory prices.

GLOBE NAIL COMPANY,

MANUFACTURERS OF

Pointed Polished & Finished Horse Shoe Nails.

Recommended by over 20,000 Horse Shoers.

All nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

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RHODE ISLAND HORSE SHOE CO.,

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PERKINS and RHODE ISLAND PATTERNS of
HORSE AND MULE SHOES.
STANLEY RULE AND LEVEL CO.,

MANUFACTURERS OF

IMPROVED CARPENTERS' TOOLS.

FACTORIES,

New Britain, Conn.

WAREHOUSES,

35 Chambers St., N. Y.

No. 102, Iron Block Plane, 5 1/4 inches in length, 1 1/4 inch Cutter, \$6.00 per doz.

THE HP HORSE NAIL CO.,

Cleveland, Ohio.

These Nails

are manufactured from the

Best Selected Stock.

Send for circulars showing dis-

counts.

These Nails

ARE

Guaranteed to be Equal

to the best in the market, and are

sold at greatly reduced rates.

5d 6d 7d 8d 9d 10d
26c. 23c. 21c. 20c. 19c. 18c.

The Penfield Block Works,

Lockport, Niagara Co., New York.



PATENT SNATCH BLOCK.

Patented December, 1877.

Just the Block required for all tube wells.
Furnished with any kind of Sheave or Bushing.
Send for samples and prices.



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Manufacturers of DAMAN STANDARD HOLLOW AUGERS.—Universally acknowledged superior to any other in the market. They have recently been improved, making them, as now offered to the trade, the most perfect tools of their kind, either in design, material or workmanship. SPOKE AND DOWEL TURNERS.—The very best as well as the cheapest. METALLIC COMBINATION FLOW PLANE.—Made of solid cast steel and of gun metal. Of an entirely new design. Can be used as Groover, Dado and Rabbet Plane, in any direction of the grain, and also as a Match Plane. COMMON SENSE DOOR SPRING.—The most durable and cheapest Door Spring yet made. LEAD PIPE CUTTERS.—To cut lead pipe in any position and without chips or burrs. Please send for circulars and prices.

IMPORTANT ANNOUNCEMENT

TO THE

STOVE TRADE

BOTH IN THE

UNITED STATES AND IN FOREIGN COUNTRIES.

We, the undersigned, have entered into a five years' contract with the State of New York for the employment of

NINE HUNDRED CONVICTS,

in the various branches of mechanical labor appertaining to the manufacture of Stoves, Ranges, Hot Air Furnaces, Hollow Ware, Tin and Sheet Iron Ware, Nickel-Plated Work, &c., &c.

These, with the additional number of one hundred citizens, making a grand total of

ONE THOUSAND MEN,

are to be employed every working day in the year, in the best appointed and most extensive Stove Foundry in the world.

The **NATIONAL STOVE ASSOCIATION**, in solemn conclave assembled, has proclaimed that its members could not compete with us in prices, and its experienced president has suggested that "those manufacturers who cannot conform to existing circumstances" had better withdraw from the trade. Such a panic has overtaken our competitors that they are about to ask the Legislature to pass a special law for their benefit—that is, to keep up the price of Stoves. There must be a serious cause for all this commotion which Stove buyers would do well to investigate.

For many years past we, in common with other manufacturers in this vicinity, have been subjected to the galling despotism of the **MOLDERS' UNION**, which compelled us, on pain of the closing of our works by "a strike," to pay from twenty-five to fifty per cent. more for labor than was current in other portions of the country, and which arbitrarily dictated whom we should and whom we should not employ. The result of this war upon "free trade" was the loss to this vicinity of business amounting to millions, besides compelling the public to pay "war prices" for their stoves.

We have been instrumental in bringing all this iniquity to an end. The cost of manufacturing stoves in general has been placed upon a more reasonable basis, and for ourselves we are determined that the public shall have a full share in the benefits. We shall bring out during the next sixty days, **TWELVE NEW AND ELEGANT PATTERNS OF**

COOKING STOVES AND RANGES,

embodying features of striking utility and beauty. These will be followed in due time by attractive improvements in

PARLOR AND HEATING STOVES,

which will command the attention of all who are interested in substantial progress.

We desire that the public shall fully understand that we can afford to put more labor on our products than any other manufacturer, and this means not only maintaining our former high standard of excellence, but improving upon the same. The Stove Association has warned the public against purchasing our goods. Our competitors and their traveling agents have taken up the cry, and thus an army of men are advertising for us gratuitously from one end of the country to the other. We feel greatly indebted to them for this, and trust they will persevere on that line. The results are already apparent in the unlooked for increase of sales at this early period. Our line of Stoves for 1878 will far surpass anything before seen in this country. Our prices will be satisfactory.

We ask the trade to withhold their orders until they have had an opportunity to confer with us or with our agents.

PERRY & CO.,

86 Beekman St., New York City.

Albany, N. Y.

15 & 17 Lake St., Chicago, Ill.

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R. H. WOLFF & CO.,
IMPORTERS OF
IRON AND STEEL.
Sole Agents for the Sale of the Celebrated
Pr. HOMOGENEOUS DEC. CAST STEEL, GUN BAR-
RELS, MOULDS AND ORDNANCE.
Sole Agents for **COCKER BROTHERS, Limited,**
Successors to **SAML. COCKER & SON, (ESTABLISHED 1752.)**
SHEFFIELD, ENGLAND.
Sole manufacturers of
“SC” EXTRA Cast Steel,
AND
CAST STEEL WIRE for all purposes.
Sole Makers of
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Railroad Supplies and General Merchants.
Office and Warehouse, 46 Cliff Street, New York.

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Successor to **JOSHUA MOSS & GAMBLE BROS.**
FRANKLIN WORKS, WADSWORTH BRIDGE WORKS, WALKLEY WORKS, SHEFFIELD, ENGLAND.
STEEL AND FILES.
Principal Depots: 80 John St., N. Y., and 512 Commerce St., Phila.
MOSS & GAMBLE SUPERIOR C. S. "FULL WEIGHT" FILES,
Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.
WARRANTED CAST STEEL, especially adapted for **DIES and TURN-**
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PUNCHES and all kinds of **MACHINIST'S TOOLS.**
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools.
Warranted not to crack in hardening Taps of any size.
Swedish Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Flow Plate Steel.
Sheet Cast Steel Shear, German, Round Machinery, Hammer, Fork and Shovel Steel
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"JENKS" SPRING STEEL, "MINERVA" SWEDEN, AND "ANGLO" CAST SPRING STEEL
"JENKS" TIRE, TOR COKE, SLEIGH SHOE, BLISTER, AND FLOW STEEL;
ALSO,
"BEAVER" FLOW, TIRE, AXE, AND SHEET IRON.
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Manufacturers of all Descriptions of Steel.
Manufacturers of Every Kind of Steel Wire.
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Manufacturers of the Celebrated
Cast and Double Shear
STEEL.
In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table Knives,
Turning Tools, Dies, Files, Clock and other Springs, and Tools of every variety.
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Manufacturers of the "Celebrated
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Also of Superior
STEEL
For Drills, Cold Chisels, Tools, Taps, Dies, &c.
COLD ROLLED STEEL for Clock Springs, Corsets, &c.
SHEET CAST STEEL for Springs, Saws, Welding and Stamping Cold, &c.
GERMAN, MACHINERY, ENGLISH AND SWEDEN SPRING STEEL,
And all other descriptions for machinists and agricultural purposes.
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SANDERSON BROS. STEEL COMPANY,
GEDDES WORKS, Syracuse, N. Y.
Manufacturers of the Celebrated
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CAST STEEL,
Warranted most **SUPERIOR** and **UNSURPASSED** for
TOOLS and GRANITE ROCK DRILLS.
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A full assortment of this universally approved **OLD BRAND** of English Steel
For Sale at
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Manufacturers of "SWEET'S" celebrated
STEEL GOODS.
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BENT AND TWISTED
TRADE MARK.
COLD
SLEIGH SHOE STEEL. CALKING STEEL. STEEL CUTTER SHOES.
MACHINERY STEEL. KNIFE BACK STEEL. "HARROW TEETH.
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Special Steel
FOR
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Turns out at least double work by increased speed
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Steel. Neither hardening nor tempering required.
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Sporting, Shipping, and Mining
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DUPONT'S GUNPOWDER MILLS,
ESTABLISHED IN 1801,
Have maintained their great reputation for 75
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THE MOST POPULAR POWDER IN USE.
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Manufacture and sell the following celebrated brands
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ORANGE LIGHTNING,
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more popular than any Powder now in use.
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The most perfect and simple, and the only ele-
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back in the barn any distance required. It can also
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highest award at the Centennial field trial. Price
\$12, with a 30 day discount to the Hardware trade.
Manufactured by the Patentee,
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Manufactured by
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"DRAW CUT"
BUTCHERS' MACHINES.
Choppers, Hand and Power.
Stuffers,
Lard Presses.
Warranted thoroughly made and
the Best in Use.
MURRAY IRON WORK
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ESTABLISHED 1835
BENIS & CALL
HARDWARE & TOOL CO.
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ALL GOODS STAMPED BENIS & CALL
NONE OTHERS GENUINE


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MANUFACTURERS OF



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The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late improvements, and are located in the best Bessemer metal district in the United States, and their managing officers are experienced in the manufacture of Bessemer Steel.

The Company warrants its rails equal in quality to any manufactured in the United States.

Rails of any weight or section furnished on short notice. Orders for trial lots solicited.

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Hammered and Rolled STEEL of every description
JERSEY CITY, NEW JERSEY.

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JOHN WILSON'S CELEBRATED

BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.

THE TRADE MARK, IN ADDITION
TO THE NAME,
IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY
JOHN WILSON.



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CORPORATION OF CUTLERS OF SHEFFIELD,
AND PROTECTED BY ACT OF PARLIAMENT.

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Proprietors of TRENTON VISE AND TOOL WORKS, Trenton, N. J.—Vices, Picks,

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W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.

Geo. Wostenholm & Son's Knives, Scissors and Razors, the largest stock in the U. S.

John Wilson's Butcher and Shoe Knives.

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We always have on hand a full assortment of

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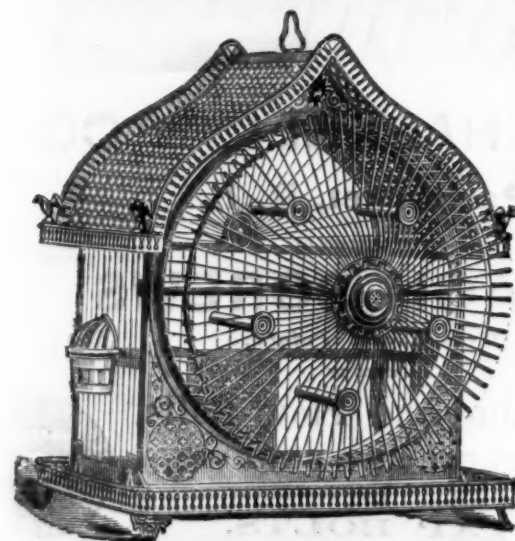
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Revolving Perch Bird Cage.

Patented Sept. 21, 1869; Nov. 26, 1872; April 3, 1877.

A PLAY-HOUSE FOR THE WORLD'S PET.



The pleasure and joy furnished
"Our Chatterer" by this New Revolving
Perch is wonderful to behold.

These Cages are designed to give
the birds more exercise, making them
stronger and healthier. Any canary
will learn to work them in a very
short time, and, once learned, it is
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Cages are an ornament to any room.

They are the perfection of workman-
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There is not the least doubt but
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"SOLID CAST STEEL"
SHOVELS AND SPADES.

The Blades are forged from Best Quality Solid Cast Steel and riveted to
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strain. They have a Concave Back, which strengthens the Shovel and facili-
tates its use in digging or spading, and will wear longer than any other Shovel.



Planters'.

Hick's Patent

SOLID
CAST STEEL.

Scot's Pattern.

PLANTERS' HOES

ARE THE

Strongest and Best Finished Hoes Manufactured,

And the only Solid Cast Steel Planters' Eye Hoes ever offered at price of Steel
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Send for prices and Sample order.

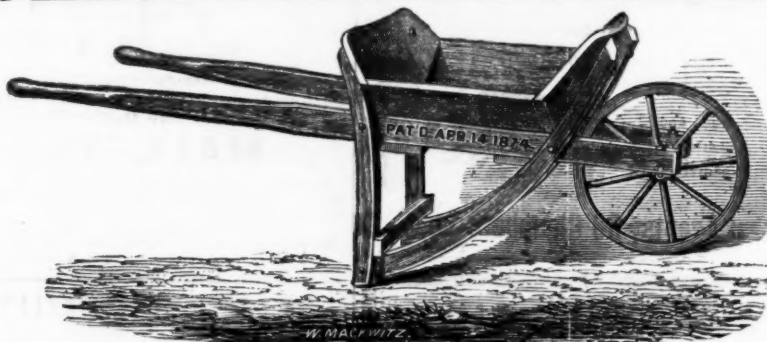
For Sale by all Hardware Dealers.

MANUFACTURED ONLY BY

KIMBALL SHOVEL CO.,

OFFICE, No. 5 German Street, BALTIMORE, MD.

CHAMPION BARROWS.



WITH WOOD OR IRON WHEELS.

A first-class article and a specialty, that will make a demand in any market and afford a good margin

to dealers. We are prepared to furnish them in large quantities. Manufactured by

BRYAN MANUFACTURING CO., Bryan, O.

SEMPLE & BIRGE MFG. CO., Sole Western Agents, ST. LOUIS, MO.

For Sale by THE NEW YORK PLOW CO., General Eastern Agents, 55 Beekman St., New York.

MANUFACTURERS' SUPPLIES.

The Best and Lowest Price.

H. A. ROGERS,

19 John Street, New York.

A few doors from Broadway.

Steam Gauges, Belting, Chucks, Drills, Packing, Governors, Jacks, Oil Cups.

STEAM PUMPS for Pumping, Fire Purposes and Boiler Feeding.

Also VALVES, PIPING and VISES.

The Largest Stock in the City.

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Miners of and Dealers in MICA of all Sizes.

MICA TO ORDER IN ANY PATTERN.

As we own extensive mines at Chester, Mass., and also in North Carolina, Stone Manufacturers and
Hardware Jobbers are invited to communicate with us before contracting elsewhere.

THE CHESTER MICA & PORCELAIN CO.,

OFFICE, 87 Liberty Street, New York.

THE SWIFT MILL.

ESTABLISHED 1845.

The annexed cut shows one of the many styles of Coffee Mills o
our manufacture, especially adapted to Grocers' use and all retailers
of coffee. They are highly ornamental, and workmanship of the very
best. We make more than 30 styles.

ALSO LANE'S PORTABLE COFFEE ROASTER

Will roast 30 to 40 lbs. at once, and can be used as a stove at other
times. Send for descriptive list to Manufacturers.

LANE BROS., Millbrook, N. Y.

Also sold by leading wholesale houses.

Our agents, Graham & Haines, 113 Chambers St., New York,
carry a full line of our goods, and will be pleased to serve you at fac-
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Emerg, Grindstones, &c.

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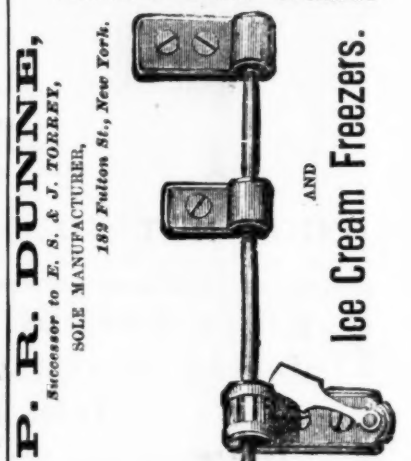
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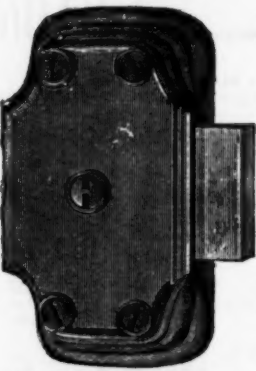
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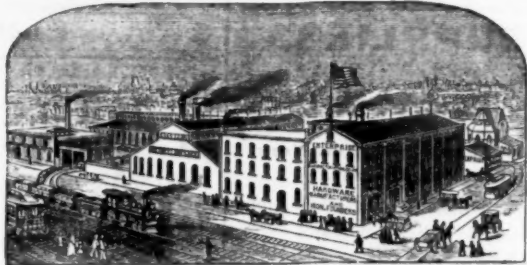
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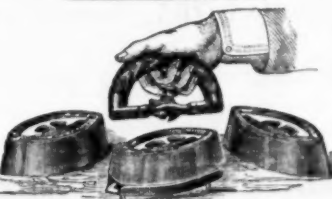
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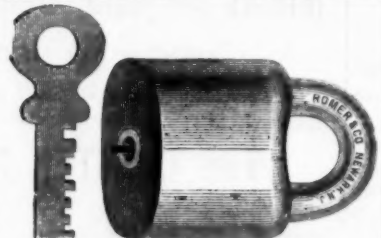
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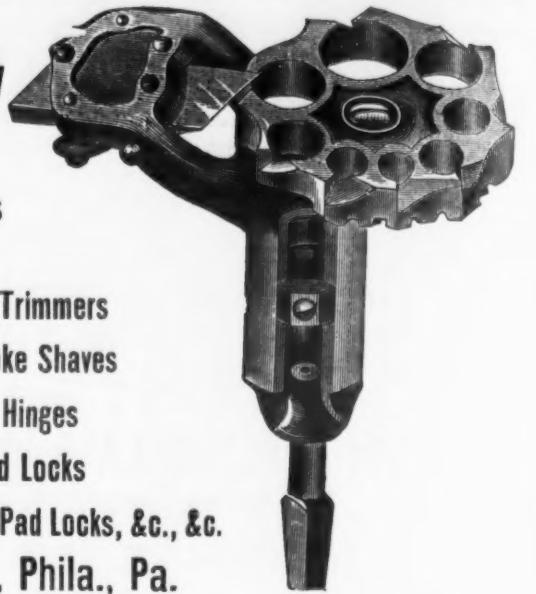
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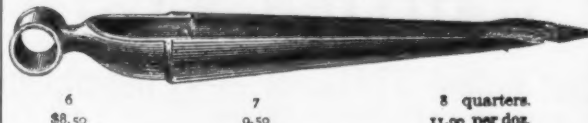
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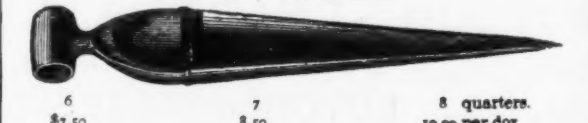
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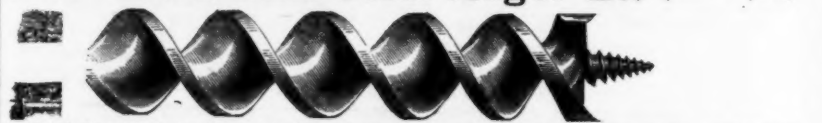
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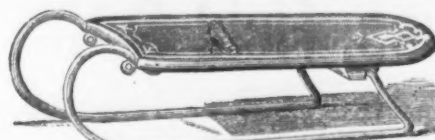
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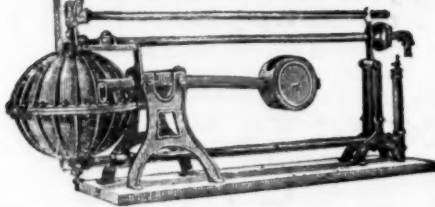
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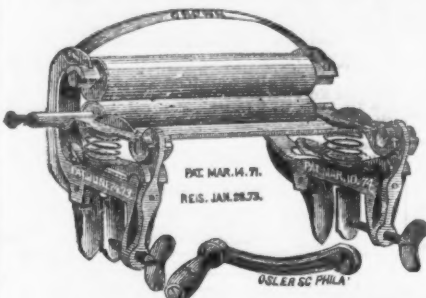
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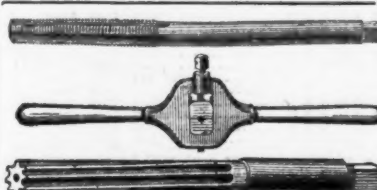
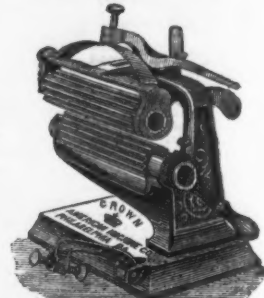
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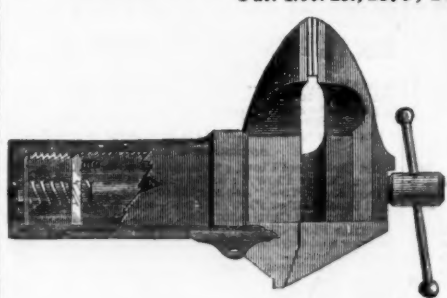
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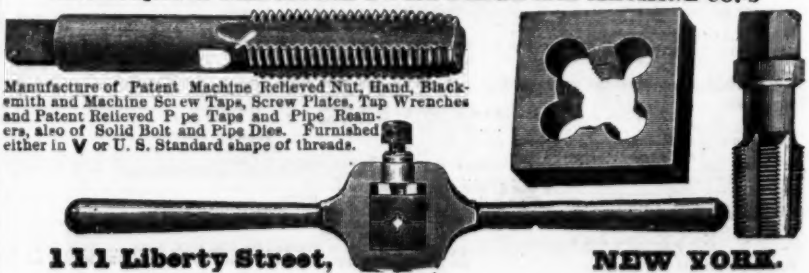
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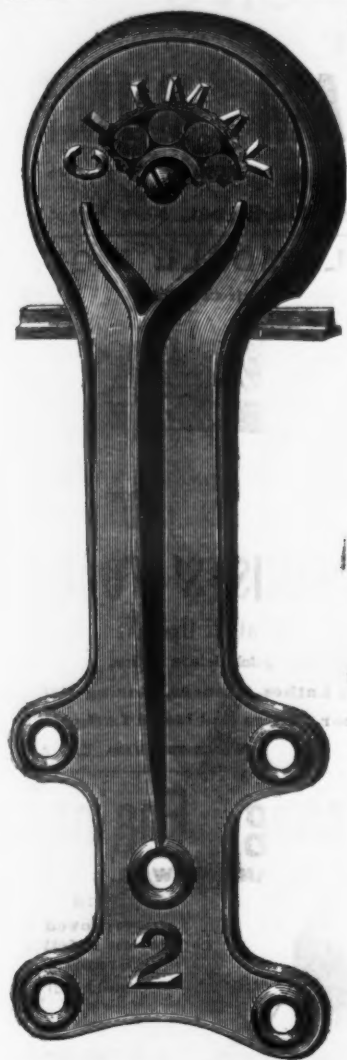
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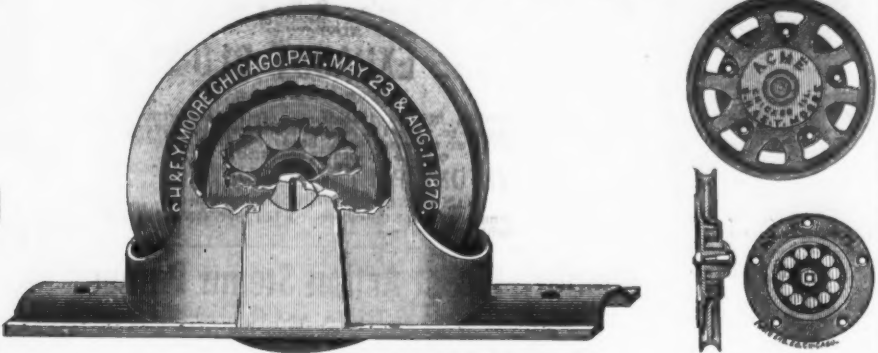


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Of Cotton Linen and Steel.

For all purposes for which Tape Measures are required.

Only manufacturers of

Paine's Patent U. S. Standard Steel

Measuring Tapes,

Pat. Spring Measuring Tapes

of Linen and Steel.

FINE TEMPERED STEEL SPRINGS.

FINE TEMPERED STEEL HAND SAWS,

From 1 inch wide upward. Warranted tougher than

any other Hand Saw. Catalogues on application

Office, 2100 Wood St., Pittsburgh, Pa.
Manufacturers of
Sawing, Shaping, Drilling and Slitting Machines
with Patent Self-Feeding Mechanisms
Power Driven and Hand Operated
Patent Friction Pulleys.



A. H. MERRIMAN,

Patent Power

PUNCHING PRESSES,

West Meriden, Conn.

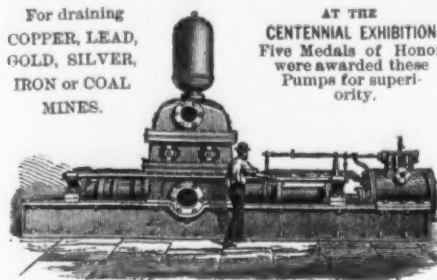
BOSTON.

Reported by Macomber, Bigelow & Doane, 156 to 164
Oyster St.

Anvils.—"Eagle American".....	per lb. 9c; dia 20 1/2
Angers.—Watrous Ship.....	dia 10 1/2
L. Hommedieu Ship.....	dia 15 1/2
Axes.—Blue Jacket.....	9 00
Racer.....	8 00
Red Cross, Handled.....	10 00
Blue Jacket.....	Boy's.....10 00
Axe Handles.—Wadsworth's Oak.....	
A (No. 1) \$2.50, B (No. 1) \$2.00, C (No. 2) \$1.50 per doz	
Blind Hinges.—Orr or Washburn's.....	per hundred set \$5 00
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Knowles' Patent Improved Mining Pumps.

For draining
COPPER, LEAD,
GOLD, SILVER,
IRON or COAL
MINES.



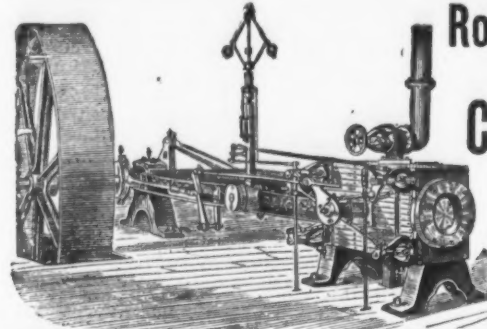
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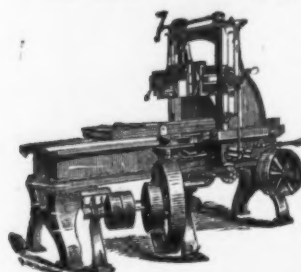
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Drop Hammers

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For Sale by all the principal Hardware Dealers.

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Of superior Quality and Hardware Specialties to

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HYDRAULIC ELEVATORS

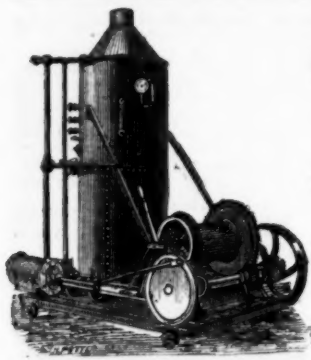
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These elevators have advantages over special steam service, in first cost of construction, running ex-
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We have a large number in operation and they have been fully tested. Satisfactory results guaran-
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A. J. DAVIS & CO.,
Patent Friction Hoisting Engines

For Mines, Quarries, Dock Building, &c.

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SATCHEL MACHINERY,

Steam Engines, Wire Drawing
Machinery, &c., &c.

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**THE BERRYMAN PATENT FEED WATER
HEATER AND PURIFIER,**

For High or Low Pressure Engines.

Delivers feed water at 210° Fahrenheit.
Prevents formation of scale. Removes old scale.
The only heater applicable to condensing engines. Over 3500 in use
in the United States and England. A saving of 15 to 25 per cent. in fuel
is secured by its use. Send for circular.

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Sole Proprietor and Manufacturer.

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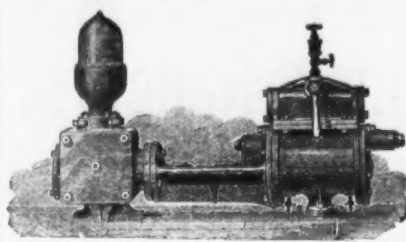
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Successors to the WOODRUFF & BEACH IRON WORKS,

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**A. S. CAMERON'S
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Is the Standard of Excellence at Home and Abroad.

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Maximum Blast and Minimum Power.

All sizes for

Forges, Foundries, Rolling Mills, &c.

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Made on same principle,

For Ventilating Mines, Buildings, etc.; Removing Dust,
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Also, sole manufacturers of the celebrated **KEYSTONE PORTA-
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For Use in Coal Collieries, Iron Mines, and Copper, Zinc,
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The Most Durable Steam Pump

made.

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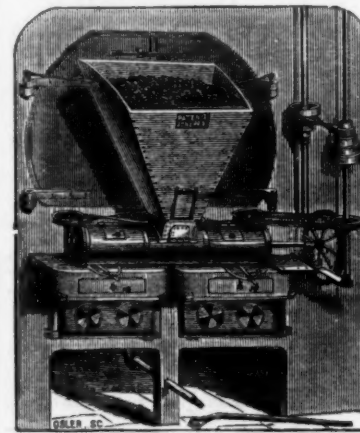
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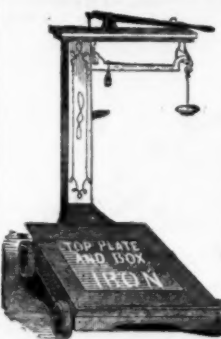
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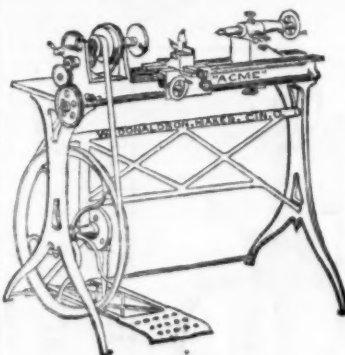
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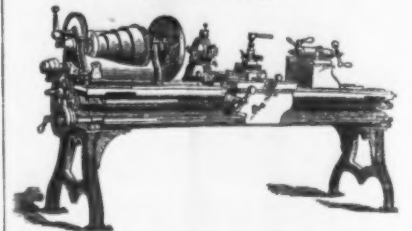
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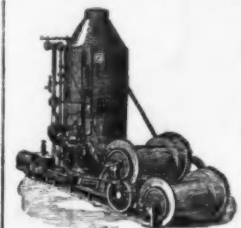
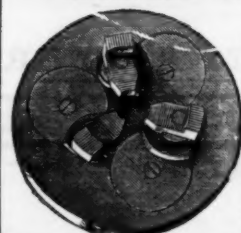
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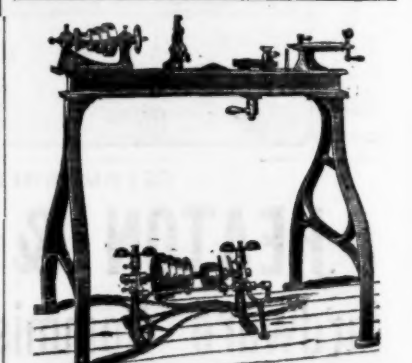
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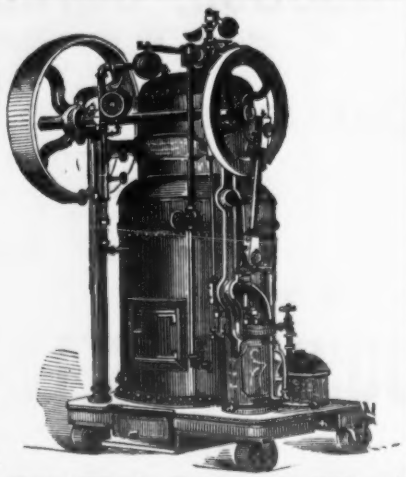
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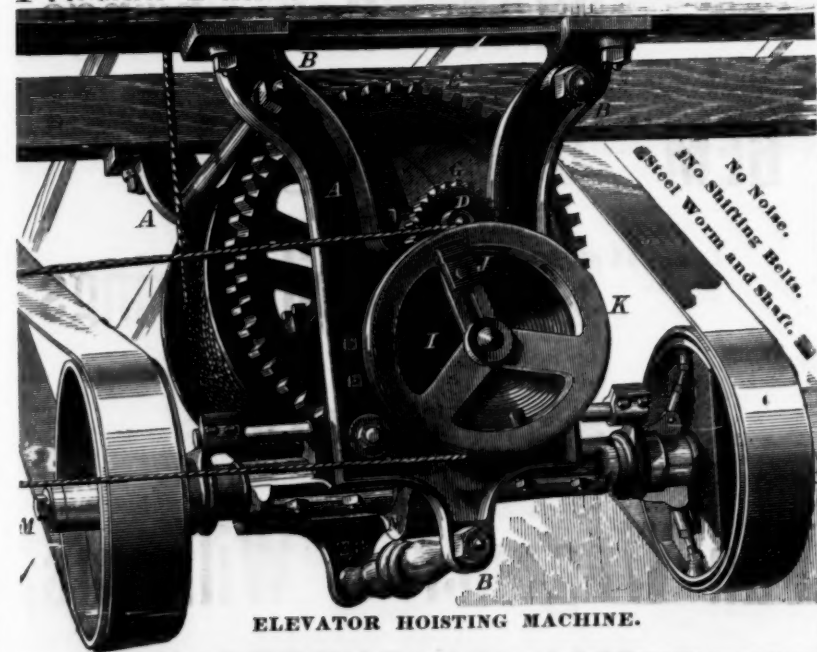
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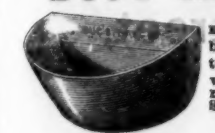
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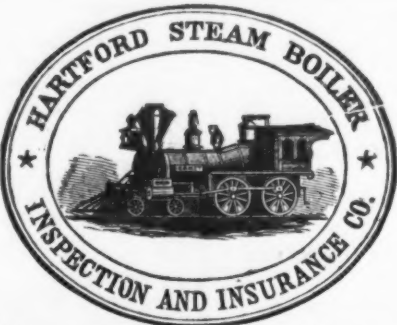
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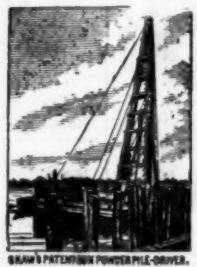
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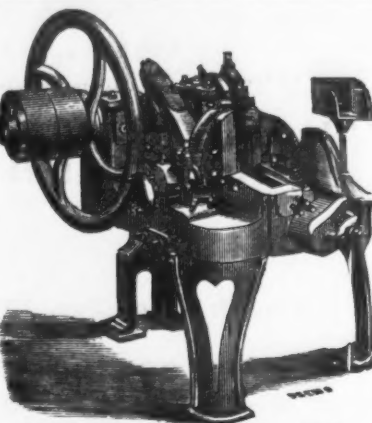
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 See cut of Elevator Holting Machine in issue of Feb. 21, 1878, page 37.

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The Emperor, Dom Pedro, accompanied by Director General Goshorn, Superintendent Albert, and others, visited Machinery Hall, at the Centennial on the evening of June 28th. Among other things inspected, at the invitation of E. M. BOYNTON, of New York, they witnessed a trial of the *New Lightning Saw*, patented March 26, 1876. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corliss, Morell, Lynch, and other members of the commission, witnessed the trial and timed the cutting. The Emperor remarked, "That was fast, very fast cutting." Last evening the Emperor made another examination of the saw.—*Philadelphia Press*, June 30.

"BOYNTON'S SAWS were effectually tested before the judges at the Philadelphia Fair, July 6th and 7th. An ash log, eleven inches in diameter, was sawed off, with a four-and-a-half-foot lightning cross-cut, by two men, in precisely six seconds as timed by the chair man of the Centennial Judges of Class Fifteen. The speed is unprecedented, and would cut a cord of wood in four minutes. The representatives of Russia, Austria, France, Italy, Spain, Belgium, Sweden, England, and several other countries, were present, and expressed their high appreciation."

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